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R.M.A.

TRANSACTIONS

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

VOL. XXIII

FOR THE YEAR 1910

THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS
FOUNDED APRIL 19TH 1888

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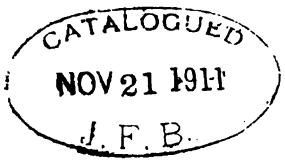

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NOTE.

The Association does not hold itself responsible for the views enunciated in the papers and discussions published in this volume.

WILLIAM WARREN POTTER, *Secretary*,
238 DELAWARE AVENUE, BUFFALO.

[Minutes and discussions stenographically reported by WILLIAM WHITFORD, Chicago, Ill.]

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CONSTITUTION AND BY-LAWS

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

TOGETHER WITH

MINUTES OF THE TWENTY-THIRD ANNUAL MEETING

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AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

CONSTITUTION.

I. The name of this Association shall be THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

II. Its object shall be the cultivation and promotion of knowledge in whatever relates to Abdominal Surgery, Obstetrics, and Gynecology.

MEMBERS.

III. The members of this Association shall consist of Ordinary Fellows, Honorary Fellows, and Corresponding Fellows.

The Ordinary Fellows shall not exceed one hundred and fifty in number.

The Honorary Fellows shall not exceed ten American and twenty-five foreign.

Candidates shall be proposed to the Executive Council at least one month before the first day of meeting, by two Fellows, and shall be balloted for at the annual meeting, a list of names having been sent to every Fellow with the notification of the meeting.

A two-thirds vote in the affirmative of all the members present shall be necessary to elect—fifteen Fellows at least being in attendance.

All candidates for active fellowship shall submit to the Executive Council, at least one month before the annual meeting, an original paper relating to Abdominal Surgery, Obstetrics, or Gynecology.

HONORARY FELLOWS.

IV. The power of nominating Honorary Fellows shall be vested in the Executive Council.

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Their election shall take place in the same manner as that of Ordinary Fellows.

They shall enjoy all the privileges of Ordinary Fellows, excepting to vote or hold office, but shall not be required to pay any fee.

CORRESPONDING FELLOWS.

V. The Corresponding Fellows shall be recommended by the Executive Council and elected by the Association.

They shall enjoy all the priveliges of Ordinary Fellows, excepting to vote or hold office, and shall be entitled to a copy of the annual TRANSACTIONS.

They shall pay an annual fee of five dollars.

OFFICERS.

VI. The officers of this Association shall be a President, two Vice-Presidents, a Secretary, a Treasurer, and six Executive Councillors.

The nomination of all officers shall be made in open session at the business meeting, and the election shall be by ballot.

The first five officers shall enter upon their duties immediately before the adjournment of the meeting at which they shall be elected, and shall hold office for one year.

["At the election next succeeding the adoption of these laws, the full number of Executive Councillors shall be elected; two for a term of three years, two for a term of two years, and two for a term of one year.

"At every subsequent election two Councillors shall be elected for a term of three years, and shall continue in office until their successors shall have been elected and shall have qualified."][1]

Any vacancy occurring during the recess may be filled temporarily by the Executive Council.

ANNUAL MEETINGS.

VII. The time and place of holding the annual meeting shall be determined by the Association or may be committed to the Executive Council each time before adjournment.

It shall continue for three days, unless otherwise ordered by vote of the Association.

[1] Amendment adopted September 21, 1898.

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AMENDMENTS.

VIII. This Constitution may be amended by a two-thirds vote of all the Fellows present at the annual meeting: *provided*, that notice of the proposed amendment shall have been given in writing at the annual meeting next preceding: and *provided, further*, that such notice shall have been printed in the notification of the meeting at which the vote is to be taken.

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AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

BY-LAWS.

THE PRESIDING OFFICER.

I. The President, or in his absence, one of the Vice-Presidents, shall preside at all meetings, and perform such other duties as ordinarily pertain to the Chair.

The presiding officer shall be *ex-officio* chairman of the Executive Council, but shall vote therein only in case of a tie.

SECRETARY.

II. The Secretary shall attend and keep a record of all meetings of the Association and of the Executive Council, of which latter he shall be *ex-officio* clerk, and shall be entitled to vote therein.

He shall collect all moneys due from the members, and shall pay the same over to the Treasurer, taking his receipt therefor.

He shall supervise and conduct all correspondence of the Association; he shall superintend the publication of the TRANSACTIONS under the direction of the Executive Council, and shall perform all the ordinary duties of his office.

He shall be the custodian of the seal, books, and records of the Association.

TREASURER.

III. The Treasurer shall receive all moneys from the Secretary, pay all bills, and render an account thereof at the annual meetings, when an Auditing Committee shall be appointed to examine his accounts and vouchers.

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EXECUTIVE COUNCIL.

IV. The Executive Council shall meet as often as the interests of the Association may require. The President, or any three members may call a meeting, and a majority shall constitute a quorum.

It shall have the management of the affairs of the Association, subject to the action of the house at its annual meetings.

It shall have control of the publications of the Association, with full power to accept or reject papers or discussions.

It shall have control of the arrangements for the annual meetings, and shall determine the order of the reading of papers.

It shall constitute a court of inquiry for the investigation of all charges against members for offences involving law or honor; and it shall have the sole power of moving the expulsion of any Fellow.

ORDER OF BUSINESS.

V. The Order of Business at the annual meetings of the Association shall be as follows:

1. General meeting at 10 o'clock A. M.
   a. Reports of Committees on Scientific Questions.
   b. Reading of Papers and Discussion of the same.
2. One business Meeting shall be held at half-past nine o'clock A. M. on the first day of the session, and another on the evening of the second day (unless otherwise ordered by vote), at which only the Fellows of the Association shall be present. At these meetings the Secretary's record shall be read; the Treasurer's Accounts submitted; the reports of Committees on other than scientific subjects offered; and all Miscellaneous Business transacted.

PAPERS.

VI. The titles of all papers to be read at any annual meeting shall be furnished to the Secretary *not later* than one month before the first day of the meeting.

No paper shall be read before the Association that has already been published, or that has been read before any other body.

Not more than thirty minutes shall be occupied in reading any paper before the Association.

Abstracts of all papers read should be furnished to the Secretary at the meeting.

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All papers read before the Association shall become its sole property if accepted for publication; and the Executive Council may decline to publish any paper not handed to the Secretary *complete* before the final adjournment of the annual meeting.

QUORUM.

VII. The Fellows present shall constitute a quorum for all business, excepting the admission of new Fellows or acting upon amendments to the Constitution, when not less than fifteen Fellows must be present.

DECORUM.

VIII. No remarks reflecting upon the personal or professional character of any Fellow shall be in order at any meeting, except when introduced by the Executive Council.

FINANCE.

IX. Each Fellow, on admission, shall pay an initiation fee of twenty-five dollars, which shall include his dues for the first year.

Every Fellow shall pay, *in advance* (*i.e.*, at the beginning of each fiscal year) the sum of twenty dollars annually thereafter.

[A fiscal year includes the period of time between the first day of one annual meeting and the first day of the next.]

Any Fellow neglecting to pay his annual dues for two years may forfeit his membership, upon vote of the Executive Council.

The Secretary shall receive, annually, a draft from the President, drawn on the Treasurer, for a sum, to be fixed by the Executive Council, for the services he shall have rendered the Association during the year.

A contingent fund of one hundred dollars shall be placed annually at the disposal of the Secretary for current expenses, to be disbursed by him, and for which he shall present proper vouchers.

ATTENDANCE.

X. Any Fellow who shall neither attend nor present a paper for three consecutive years, unless he offer a satisfactory excuse, may be dropped from fellowship, upon vote of the Executive Council.

RULES.

XI. *Robert's Rules of Order* shall be accepted as a parliamentary guide in the deliberations of the Association.

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AMENDMENTS.

XII. These By-Laws may be amended by a two-thirds vote of the Fellows present at any meeting; *provided*, previous notice in writing shall have been given at the annual meeting next preceding the one at which the vote is to be taken.

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OFFICERS FOR 1910–1911.

PRESIDENT.

HERMAN E. HAYD, BUFFALO.

VICE-PRESIDENTS.

HENRY SCHWARZ, SAINT LOUIS.
LEWIS C. MORRIS, BIRMINGHAM

SECRETARY.

WILLIAM WARREN POTTER, BUFFALO.

TREASURER.

XAVIER OSWALD WERDER, PITTSBURG.

EXECUTIVE COUNCIL.

ROBERT TUTTLE MORRIS, NEW YORK.
AARON B. MILLER, SYRACUSE.
JOHN W. KEEFE, PROVIDENCE.
E. GUSTAV ZINKE, CINCINNATI.
WILLIAM HENRY HUMISTON, CLEVELAND.
HUGO OTTO PANTZER, INDIANAPOLIS.

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HONORARY FELLOWS.

*Deceased.

1899.—BALLANTYNE, JOHN WILLIAM, M.D., F.R.C.P.E., F.R.S. Edin. Lecturer on Midwifery and Gynecology, School of Medicine of the Royal Colleges, Surgeons' Hall, Edinburgh; Physician to the Royal Maternity Hospital, Edinburgh; formerly President of the Edinburgh Obstetrical Society; Examiner in Midwifery in the University of Edinburgh; Honorary Fellow of the Glasgow Obstetrical and Gynecological Society. 19 Rothesay Terrace, Edinburgh, Scotland.

1889.—BANTOCK, GEORGE GRANVILLE, M.D., F.R.C.S. Ed. Surgeon to the Samaritan Free Hospital. 36 Gloucester Place, Portman Square, W. London; Residence, Dunrobin, Payne's Lane, Pinner, Middlesex, England.

1889.—BARBOUR, SIR A. H. FREELAND, M.A., B.S.C., M.D., F.R.C.P. Ed., F.R.S. Ed. Lecturer on Midwifery and Diseases of Women in the Edinburgh Medical School; Assistant Physician to the Royal Maternity Hospital; Assistant Physician for Diseases of Women to the Royal Infirmary; Physician to the Women's Dispensary; Fellow of the Edinburgh and London Obstetrical Societies, and of the British Gynecological Society; Corresponding Fellow of the Royal Academy of Medicine, Turin. 4 Charlotte Square, Edinburgh, Scotland.

1892.—*BOISLINIERE, L. CH., A.B., M.D., LL.D. Saint Louis, Mo. 1896.

1890.—CHAMPIONNIERE, JUST. LUCAS, M.D. 3 Avenue Montaigne, Paris, France.

1889.—*CHARPENTIER, LOUIS ARTHUR ALPHONSE, M.D Paris, France. 1899.

1888.—CORDES, AUGUST ELISEE, M.D. Member of the Royal College of Physicians, London; Fellow of the Obstetrical Society of London and of the British Gynecological Society; Corresponding National Member of the Obstetrical and Gynecological Society of Paris; Honorary Fellow of the Detroit Gynecologi-

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cal Society; late "Chirurgien-adjoint" of the Obstetrical and Gynecological Clinic at the Maternity at Geneva; Consulting Accoucheur of the Miséricorde Hospital, etc.; Perpetual member of the Société Obstétricale de France, Paris, France. 3 Chemin du Square, Geneva, Switzerland.

1890.—*CORSON HIRAM, M.D. Plymouth Meeting, Pa. 1896.

1909.—CROFFORD, THOMAS JEFFERSON, M.D. (Transferred from Ordinary List.) Office, Goodwyn Institute, Memphis, Tenn.

1889.—CROOM, SIR J. HALLIDAY, M.D., F.R.C.P.E., F.R.C.S.E., F.R.S.E. Professor of Midwifery in the University of Edinburgh; Consulting Physician to the Royal Infirmary; Physician to the Royal Maternity Hospital; late President of the Royal College of Surgeons, Edinburgh. 25 Charlotte Square, Edinburgh, Scotland.

1889.—*DUNLAP, ALEXANDER, A. M., M.D. Springfield, O. 1894.

1888.—*EDIS, ARTHUR WELLESLEY, M.D. Lond. F.R.C.S., M.R.S.C.S. London, England. 1893.

1889.—*EKLUND, ABRAHAM FREDRIK, M.D. Stockholm, Sweden. 1898.

1891.—FERNANDEZ, JUAN SANTOS, M.D. Prado, No. 105, Havana, Cuba.

1891.—*FISHER, GEORGE JACKSON, A.M., M.D. Sing Sing, N. Y. 1893.

1889.—FREUND, WILLIAM ALEXANDER, M.D. Emeritus Professor and Director of the Clinic for Diseases of Women in the University of Strassburg. Kleiststrasse 9, Berlin W., Germany.

1896.—*GASTON, JAMES MCFADDEN, A.M., M.D. Atlanta, Ga. 1903.

1892.—*GREEN, TRAILL, M.D., LL.D. Easton, Pa. 1897.

1894.—JACOBS, CHARLES, M.D. Professor of the Faculty of Medicine of Brussels; Secretary-General of the Permanent Committee of the Periodic International Congress of Gynecology and Obstetrics; Honorary President of the Belgian Society of Gynecology and Obstetrics; Honorary Fellow of the Gynecological Societies of New York and Chicago; Member of the Southern Surgical and Gynecological Association; Correspond-

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ing Member of the Gynecological Society of Paris; Surgeon to the Brussels Polyclinic. 53 Boulevard de Waterloo, Brussels, Belgium.

1889.—*KEITH, THOMAS, M.D. London, England. 1896.

1889.—LEOPOLD, G., M.D. Professor in the Royal Clinic for Diseases of Women. 90 Pfotenhauerstrasse, Dresden, Germany.

1905.—McGRAW, THEODORE A., M.D. 73 Cass Street, Detroit, Mich.

1894.—*MACLEAN, DONALD, M.D. Detroit, Mich. 1903.

1890. MARTIN, AUGUST, M.D. Emeritus Professor of Gynecology in the University of Greifswald. Keithstrasse 14, Berlin W. 62, Germany.

1895.—*MASTIN, CLAUDIUS HENRY, M.D., LL.D. Mobile, Ala. 1898.

1897.—MATHEWS, JOSEPH McDOWELL, M.D. Professor of Diseases of the Rectum and Clinical Surgery, Hospital College of Medicine; President of the Kentucky State Board of Health; First Vice-President American Medical Association, 1898; President, 1899. 411 The Masonic, Louisville, Kentucky.

1891.—*MOSES, GRATZ ASHE, M.D. Saint Louis, Mo. 1901.

1905.—*MYERS, WILLIAM HERSCHEL, M.D. (*Founder.* Transferred from Ordinary Fellows.) Fort Wayne, Ind. 1907.

1889.—NICOLAYSEN, JULIUS, M.D. Professor of Surgery in the University of Norway. Christiania, Norway.

1910.—DE OTT, DIMITRIJ OSKAROVIC. Professor of Obstetrics and Gynecology in the Royal Pavloona Clinical Institute of St. Petersburg; President of the Fifth International Congress of Obstetrics and Gynecology. Wassily Ostrow, University Place, St. Petersburg, Russia.

1891.—PIETRANERA, E., M.D. Professor of Obstetrics in the Medical Department of the National University; Director of the Maternity Branch of the Clinical Hospital. 2711 Calle Rio Adaria, Buenos Ayres, Argentine Republic, S. A.

1889.—*SAENGER, MAX, M.D. Prague. 1903.

1890.—*SAVAGE, THOMAS, M.D., F.R.C.S. Eng. Birmingham, England. 1907.

1889.—SCHULTZE, BERNHARD SIGMUND, M.D. Professor of Gynecology; Director of the Lying-in Institute and of the Gynecological Clinic. 2 Sellierstrasse, Jena, Germany.

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1890.—SEGOND, PAUL, M.D. Professor of Clinical Surgery of the Faculty of Medicine, Paris; Surgeon to the Salpétrière. 4 Quai Debilly, Paris, France.

1899.—SINCLAIR, SIR WILLIAM JAPP, M.A., M.D. (Aberd.), M.R.C.P. Professor of Obstetrics and Gynecology, Owens College, Victoria University; Physician to the Manchester Southern Hospital for Diseases of Women and Children. Garvock House, Dudley Road, Whalley Range, Manchester, England.

1894.—*SLAVIANSKY, KRONID, M.D. St. Petersburg, Russia. 1898.

1888.—*SMITH, J. GREIG, M.A., C.M., M.B., F.R.S.E. Bristol, England. 1897.

1896.—STERNBERG, GEORGE MILLER, A.M., M.D., LL.D. Surgeon General U. S. Army (Retired). 2005 Massachusetts Avenue, Washington, D.C.

1899.—*STORRS, MELANCTHON, A.M., M.D. (*Founder.* Transferred from Ordinary List.) Hartford, Conn. 1900.

1888.—*Tait, LAWSON, M.D., LL.D., F.R.C.S.E. Birmingham, England. 1899.

1905.—*TAYLOR, WILLIAM HENRY, M.D. *President*, 1888–1889. (*Founder.* Transferred from Ordinary List.) Cincinnati, Ohio. 1910.

1900.—*THORNTON, J. KNOWSLEY, M.B., M.C. Cambridge, England. 1904.

1888.—WILLIAMS, SIR JOHN, BART., M.D., F. R. C. P. Blaen Llynant, Aberystwyth, Cardiganshire, Wales.

1901.—WEBER, GUSTAV C. E., M.D., LL.D. Willoughby, Ohio.

1889.—VON WINCKEL, F., M.D. Professor of Gynecology and Director of the Royal Hospital for Women; Member of the Supreme Council and of the Faculty of Medicine in the University of Munich. 66 Ungererstrasse, Munich, Germany.

1905.—WYMAN, WALTER, M.D. Surgeon General United States Public Health and Marine Hospital Service. Stoneleigh Court, Washington, D.C.

Total, twenty-five Honorary Fellows.

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CORRESPONDING FELLOWS.

1899.—BEUTTNER, OSCAR, M.D. Privat-docent of the Faculty of Medicine. 2 Place de la Fasterie, Geneva, Switzerland.

1903.—CROZEL, G., M.D. Professor Libre of Gynecology. Collonges au Mont d'Or (Rhone), France.

1903.—ELLIS, GUILHERME, M.D. Chief Surgeon to the Real Sociedade de Beneficencia Portuguese Hospital. 6 Rua Aurora, S. Paulo, Brazil, S. A.

1891.—GRIFFIN, HERBERT SPOHN, B.A., M.D. Surgeon to Hamilton City Hospital; Examiner in Obstetrics, University of Toronto. 157 Main Street, Hamilton, Ontario, Canada.

1903.—LANE, HORACE MANLEY, M.D., LL.D. President of Mackenzie College, S. Paulo, Brazil. 184 Rua da Consolacao, S. Paulo, Brazil, S. A.

1891.—MACHELL, HENRY THOMAS, M.D., L.R.C.P. Ed. Lecturer on Obstetrics, Women's Medical College; Surgeon to St. John's Hospital for Women; Physician to Victoria Hospital for Sick Children and to Hillcrest Convalescent Home. 95 Bellevue Avenue, Toronto, Ontario, Canada.

1898.—WRIGHT, ADAM HENRY, B.A., M.D. Univ. Toronto, M.R.C.S., Eng. Professor of Obstetrics in the University of Toronto; Obstetrician and Gynecologist to the Toronto General Hospital and Burnside Lying-in Hospital, *President*, 1891. (Transferred from Ordinary List, 1898.) 30 Gerrard Street, East, Toronto, Ont., Canada.

Total, seven Corresponding Fellows.

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ORDINARY FELLOWS.

*Deceased. †Resigned.

1902.—ABRAMS, EDWARD THOMAS, A.M., M.D. Consulting Surgeon to the Lake Superior General Hospital; Member of the Michigan State Medical Society; Member of the American Medical Association. Dollar Bay, Mich.

1890.—ASDALE, WILLIAM JAMES, M.D. Professor of Diseases of Women, Western Pennsylvania Medical College (Medical Department, University of Western Pennsylvania), Pittsburg, Pa. Patterson Heights, Beaver Falls, Pa.

1895.—BACON, JOSEPH BARNES, M.D. Professor of Rectal Diseases at the Post-Graduate Medical School; Instructor in Clinical Surgery in the Medical Department of Northwestern University, Chicago. Macomb, Ill.

Founder.—*BAKER, WASHINGTON HOPKINS, M.D. Philadelphia, Pa. 1904.

1895.—BALDWIN, JAMES FAIRCHILD, A.M., M.D. Surgeon to Grant Hospital, 125 South Grant Avenue. Residence, 405 E. Town Street, Columbus, Ohio.

1903.—Bandler, SAMUEL WYLLIS, M.D. Instructor in Gynecology in the New York Post-Graduate Medical School and Hospital; Adjunct Gynecologist to the Beth Israel Hospital. 134 West Eighty-seventh Street, New York, N.Y.

1889.—†BARROW, DAVID, M.D. Lexington, Ky. 1907.

1907.—BELL, JOHN NORVAL, M.D. Adjunct Professor of Obstetrics and Gynecology at Detroit College of Medicine; Gynecologist to Harper Hospital Polyclinic. Residence, 418 Fourth Avenue; Office, 506 Washington Arcade, Detroit, Mich.

1892.—BLUME, FREDERICK, M.D. Gynecologist to the Allegheny General Hospital and Pittsburg Free Dispensary; Obstetrician to the Roselia Maternity Hospital; Consulting Gynecolo-

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gist to the Mercy Hospital; President of the Pittsburg Obstetrical Society, 1892. Office, Jenkins Building, Pittsburg, Pa.

1900.—BONIFIELD, CHARLES LYBRAND, M.D. Professor of Clinical Gynecology in the Medical College of Ohio; President of the Cincinnati Academy of Medicine, 1900; Gynecologist to the Good Samaritan, Christ's, and to Speer's Memorial Hospitals; formerly President of the Cincinnati Obstetrical Society; Secretary of the Section on Obstetrics and Gynecology, American Medical Association, 1901–4; Chairman, 1905; *Vice-president*, 1907. Residence, corner Washington and Gholson Avenues; Office, 409 Broadway, Cincinnati, Ohio.

1896.—BOSHER, LEWIS C., M.D. Professor of Practice of Surgery and Clinical Surgery, Medical College of Virginia; Visiting Surgeon, Memorial Hospital, Richmond. 422 East Franklin Street, Richmond, Va.

Founder.—BOYD, JAMES PETER, A.M., M.D. Professor of Obstetrics, Gynecology and Diseases of Children in the Albany Medical College; Gynecologist to the Albany Hospital; Consulting Obstetric Surgeon to St. Peter's Hospital; Fellow of the British Gynecological Society. 152 Washington Avenue, Albany, N. Y.

1889.—BRANHAM, JOSEPH H., M.D. Professor of Surgery in the Maryland Medical College; Surgeon to the Franklin Square Hospital. 2200 Eutaw Place, corner Ninth Avenue, Baltimore, Md.

1894.—BROWN, JOHN YOUNG, M.D. Professor of Clinical Surgery in Saint Louis University; Chief Surgeon to St. John's Hospital; President of the Mississippi Valley Medical Association, 1898; *Vice-president*, 1905; *President*, 1906; *Executive Council*, 1907–8. Residence, 303 North Grand Avenue; Office, 612 Metropolitan Building, Saint Louis, Mo.

1889.—*BURNS, BERNARD, M.D. Allegheny, Pa. 1892.

1908.—BUTEAU, SAMUEL H. M.D. Former member of California State Board of Medical Examiners; formerly Visiting Surgeon to Almeda County Hospital. Residence, 1052 Telegraph Avenue; Office, 1155 Broadway, Oakland, Cal.

1906.—CANNADAY, JOHN EGERTON, M.D. Surgeon to the Charleston General Hospital; Surgeon to McMillan's Hospital

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Charleston; Fellow of the Southern Surgical and Gynecological Association; Non-resident Honorary Fellow of the Kentucky State Medical Association; Fellow West Virginia Medical Association, Virginia Medical Society, American Medical Association, Tri-State Society Virginia and the Carolinas, and American Association of Railway Surgeons. Office, Coyle and Richardson Building, Charleston, W. Va.

Founder.—CARSTENS, J. HENRY, M.D. Professor of Obstetrics and Clinical Gynecology in the Detroit College of Medicine; Gynecologist to the Harper Hospital; Attending Physician to the Woman's Hospital; Obstetrician to the House of Providence; President of the Detroit Gynecological Society, 1892. *Vice-president*, 1888–89; *President*, 1895; *Executive Council*, 1896–98. 620 Woodward Avenue, Detroit, Mich.

1895.—CHASE, WALTER BENAJAH, M. D. Visiting surgeon to the Bethany Deaconess Hospital; Consulting Obstetrician and Gynecologist to the Long Island College Hospital; Consulting Gynecologist to the Nassau Hospital, Mineola L. I.; Consulting Gynecologist to the Jamaica Hospital; President of the Council of the Long Island College Hospital; Fellow of the Brooklyn Gynecological Society (President, 1893); Member Medical Society County of Kings (President, 1892); Permanent Member Medical Society State of New York; Member of the Brooklyn Pathological Society; Member of the Associated Physicians of Long Island; and Honorary Member of the Queens County Medical Society; *Executive Council*, 1899–1904. 1050 Park Place, Borough of Brooklyn, New York.

Founder.—†CLARKE, AUGUSTUS PECK, A.M., M.D. Cambridge, Mass. 1908.

1890.—*COLES, WALTER, M.D. Saint Louis, Mo. 1892.

1904.—CONGDON, CHARLES ELLSWORTH, M.D. Gynecologist to the City Hospital for Women. Office, 859 Humboldt Parkway, Buffalo, N. Y.

1906.—CRAIG, DANIEL HIRAM, M.D. Surgeon to Out Patients, Free Hospital for Women; Instructor in Gynecology in the Boston Polyclinic. 386 Commonwealth Avenue, Boston, Mass.

1901.—CRILE, GEORGE W., A.M., M.D. Professor of Clinical Surgery in the Western Reserve University Medical College; Surgeon to St. Alexis's Hospital; Associate Surgeon to Lake-

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side Hospital. *Vice-president*, 1907. Residence, 6203 Euclid Avenue; Office, Osborn Building, Cleveland, Ohio.

1894.—†CROFFORD, THOMAS JEFFERSON, M.D. Memphis, Tenn. 1909. (See Honorary Fellows.)

1905.—CROSSEN, HARRY STURGEON, M.D. Clinical Professor of Gynecology in Washington University; Gynecologist to Washington University Hospital; Associate Gynecologist to Mullanphy Hospital; Consulting Gynecologist to Bethesda, City and Female Hospitals. Residence, 4477 Delmar Avenue; Office, 310 Metropolitan Building, Saint Louis, Mo.

1897.—†CUMSTON, CHARLES GREENE, B.M.S., M.D. Boston, Mass. 1909.

Founder.—†*CUSHING, CLINTON, M.D. San Francisco, Cal. 1900. 1904.

1903.—DAVIS, JOHN D.S., M.D., LL.D. Professor of Surgery in the Birmingham Medical College; Surgeon to Hillman Hospital; ex-President of Jefferson County Medical Society and of the Board of Health of Jefferson County. *Vice-president*, 1909. 2031 Avenue G., Birmingham, Ala.

1889.—*DAVIS, WILLIAM ELIAS B., M.D. Birmingham, Ala. 1903.

1902.—DEAVER, HARRY CLAY, M.D. Professor of Surgery in the Woman's Medical College of Pennsylvania; Surgeon to the Episcopal and the Stetson Hospitals and to the Children's Hospital of the Mary J. Drexel Home. 1534 North Fifteenth Street, Philadelphia, Pa.

1896.—DEAVER , JOHN BLAIR, M.D. Professor of Clinical Surgery at the University of Pennsylvania; Surgeon in Chief to the German Hospital; Consulting Surgeon to the Germantown Hospital. 1634 Walnut Street, Philadelphia, Pa.

1910.—DICE, WILLIAM GORDON, A. B., M. D. 240 Michigan Street, Toledo, Ohio.

1909.—DICKINSON, GORDON K., M.D. Surgeon to the City and Christ Hospitals; Consulting Surgeon to Bayonne Hospital. 280 Montgomery Street, Jersey City, N. J.

1892.—DORSETT, WALTER BLACKBURN, M.D. Professor of Obstetrics and Gynecology in the Marion Sims-Beaumont College of Medicine, Medical Department of Saint Louis University;

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Gynecologist to the Missouri Baptist Sanitarium, Evangelical Deaconess's Hospital and the Good Samaritan Hospitals; Consulting Gynecologist to the Saint Louis City and Female Hospitals; President of the Saint Louis Medical Society, 1892; President of the Missouri State Medical Society, 1900; Chairman of the Section on Obstetrics and Gynecology, American Medical Association, 1907. *Vice-president*, 1898; *President*, 1904; *Executive Council*, 1905–1907. Office, Linmar Building, corner Washington and Vandeventer Avenues, Saint Louis, Mo.

1889.—†*DOUGLAS, RICHARD, M.D. Nashville, Tenn. 1905. 1907.

1892.—*DUFF, JOHN MILTON, A.M., M.D., Ph.D. Pittsburg, Pa. 1904.

1898.—*DUNN, JAMES C., M.D. Pittsburg, Pa. 1907.

1892.—*DUNNING, LEHMAN HERBERT, M.D. Indianapolis, Ind. 1906.

1899.—EASTMAN, THOMAS BARKER, A.B., M.D. Professor of the Medical and Surgical Diseases of Women, Central College of Physicians and Surgeons; Gynecologist to the City Hospital, City Dispensary, and Central Free Dispensary. 309 Pennway Building, Indianapolis, Ind.

1904.—ELBRECHT, OSCAR H., M.D. Superintendent and Surgeon in charge of the Saint Louis Female Hospital. 623–625 Metropolitan Building, Saint Louis, Mo.

1906.—ERDMANN, JOHN FREDERICK, M.D. Clinical Professor of Surgery in University-Bellevue Hospital Medical College; Surgeon to Gouverneur, St. Mark's, and Sydenham Hospitals. 60 West Fifty-second Street, New York, N. Y.

1895.—FERGUSON, ALEXANDER HUGH, M.D. Professor of Surgery at the Chicago Post-Graduate Medical School; President of the Chicago Medical Society, 1910. Residence, 4619 Grand Boulevard; Office, Suite 300, Reliance Building, 100 State Street, Chicago, Ill.

1910.—FOSTER, CURTIS SMILEY, A. B., M. D. Gynecologist to the Western Pennsylvania Hospital, Pittsburg. Residence, 5749 Ellsworth Avenue; Office, 308 Diamond Bank Building, Pittsburg, Pa.

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1903.—FRANK, LOUIS, M.D. Professor of Abdominal and Pelvic Surgery in the Medical Department of Kentucky University; Surgeon to Louisville City Hospital; Surgeon and Gynecologist to the Broadway Infirmary. Residence, 1415 Fourth Avenue; Office, 400 The Atherton, Louisville, Ky.

1890.—*FREDERICK, CARLTON CASSIUS, B.S., M.D. Buffalo, N. Y. 1911.

1891.—GIBBONS, HENRY, JR., A.M., M.D. Dean and Professor of Obstetrics and Diseases of Women and Children in Cooper Medical College; Consulting Physician to the French and the Children's Hospitals. Residence, 199 Twentieth Avenue; Office, Union Square Building, 350 Post Street, San Francisco, Cal.

1902.—GILLETTE, WILLIAM J., M.D. Professor of Abdominal Surgery and Gynecology in the Toledo Medical College; Surgeon to Robinwood Hospital. 1613 Jefferson Street, Toledo, Ohio.

1895.—GOLDSPOHN, ALBERT, M.S., M.D. Professor of Gynecology, Post-Graduate Medical School; Senior Gynecologist, German Hospital; Attending Gynecologist, Post-Graduate and Charity Hospitals. *Vice-President*, 1901. Residence, 2120 Cleveland Avenue; Office, 34 Washington Street, Chicago, Ill.

1904.—*GOODFELLOW, GEORGE E., M.D. Los Angeles, Cal. 1910.

1903.—GUENTHER, EMIL ERNEST, M.D. Senior Assistant Gynecologist and Obstetrician to St. Barnabas's Hospital; Attending Surgeon to the German Hospital, Newark. 159 West Kinney Street, Newark, N. J.

1907.—GUITERAS, RAMON, M.D. Visiting Gynecologist to the City Hospital; Visiting Surgeon to Columbus Hospital; Consulting Surgeon to the French Hospital; Professor of Genitourinary Surgery at the Post-Graduate Medical School and Hospital, New York. 80 Madison Avenue, New York, N. Y.

1892.—*HAGGARD, WILLIAM DAVID, M.D. Nashville, Tenn. 1901.

1900.—HAGGARD, WILLIAM DAVID, JR., M.D. Professor of Gynecology, Medical Department University of Tennessee; Professor of Gynecology and Abdominal Surgery, University of the South (Sewanee); Gynecologist to the Nashville City Hospital;

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President of the Nashville Academy of Medicine; Secretary of the Section on Diseases of Women and Obstetrics, American Medical Association, 1898; Fellow (and Secretary) of the Southern Surgical and Gynecological Association; Member of the Alumni Association of the Woman's Hospital, N. Y. *Vice-president*, 1904. 148 Eighth Avenue, North, Nashville, Tenn.

1906.—HALL, JOSEPH ARDA, M.D. Clinical Assistant in Gynecology at the Miami Medical College. Cincinnati. 628 Elm Street, Cincinnati, Ohio.

1889.—HALL, RUFUS BARTLETT, A. M., M. D. Professor of Clinical Gynecology in the Ohio-Miami Medical College, Medical Department of University of Cincinnati; Gynecologist to the Cincinnati Hospital; Surgeon in charge of the Hall Hospital; Member of the British Medical Society; of the Southern Surgical and Gynecological Association; of the American Medical Association; of the Ohio State Medical Society (President, 1900); of the Cincinnati Academy of Medicine (President, 1909); of the Cincinnati Obstetrical Society (Ex-President). *Vice-president*, 1891; *President*, 1900; *Executive Council*, 1904-1909. Berkshire Building, 628 Elm Street, Cincinnati, Ohio.

1902.—HAMILTON, CHARLES SUMNER, A.B., M.D. Professor of the Principles of Surgery in Sterling Medical College; Surgeon to Mt. Carmel and the Children's Hospitals. 142 South Garfield Street, Columbus, Ohio.

1910.—HARRAR, JAMES AITKEN, M. D. Attending Surgeon to the Lying-in Hospital of the City of New York. Residence and Office 29 East Seventy-seventh Street, New York, N. Y.

1894.—HAYD, HERMAN EMIL, M. D., M. R. C. S. Eng. Surgeon to the German Deaconess Hospital; Surgeon to the German Hospital. *Vice-president*, 1903; *Executive Council*, 1908-1910; *President*, 1911. 493 Delaware Avenue, Buffalo, N. Y.

1908.—HEDGES, ELLIS W., A.B., M.D. Visiting Surgeon to Muhlenberg Hospital, Plainfield, N. J. 703 Watchung Avenue, Plainfield, N. J.

Founder.—*HILL, HAMPTON EUGENE, M.D. Saco, Me. 1894.

1910.—HILL, ISADORE LEON, A. B., M. D. Clinical Instructor of Obstetrics at Cornell University Medical College; Visiting Obstetrician to the Red Cross Hospital; Attending Obstetrician to Sydenham Hospital. 616 Madison Avenue, New York, N. Y.

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1891.—HOLMES, JOSUS BILLINGTON SANDERS, M.D. Professor of Obstetrics in the Southern Medical College; President of the Georgia State Medical Association, 1890; Member of the Southern Surgical and Gynecological Association; Member of the American Medical Association. Valdosta, Ga.

1891.—HOWITT, HENRY, M.D., M.R.C.S. Eng. Surgeon to the Guelph General and St. Joseph's Hospital, Guelph; Member of the British and Ontario Medical Associations; Medical Health Officer for the City of Guelph. *Vice-president*, 1895. 221 Woolwich Street, Guelph, Ontario, Canada.

1905.—HUGGINS, RALEIGH RUSSELL, M.D. Surgeon to St. Francis Hospital. *Vice-president*, 1910. 1018 Westinghouse Building, Pittsburg, Pa.

1895.—HUMISTON, WILLIAM HENRY, M.D. Associate Professor of Gynecology in the Medical Department of Western Reserve University; Gynecologist in Chief to St. Vincent's Charity Hospital; Consulting Gynecologist to the City Hospital; President of the Ohio State Medical Society, 1898. *Executive Council*. 1902–1903, 1908, 1910–1911. *President*, 1909. Residence, 2041 East Eighty-ninth Street; Office, 536 Rose Building, Cleveland, Ohio.

1898.—*HYDE, JOEL W., M.D. Brooklyn, N. Y. 1907.

1901.—ILL, CHARLES L., M.D. Surgeon to the German Hospital; Assistant Gynecologist to St. Michael's and St. Barnabas's Hospitals; Obstetrician to St. Barnabas's Hospital, Newark; Assistant Gynecologist to All Souls' Hospital, Morristown. 188 Clinton Avenue, Newark, N. J.

Founder.—ILL, EDWARD JOSEPH, M.D. Surgeon to the Woman's Hospital; Medical Director of St. Michael's Hospital; Gynecologist and Supervising Obstetrician to St. Barnabas's Hospital; Consulting Gynecologist to the German Hospital and the Bnoth Israel Hospital of Newark, N. J., to All Souls' Hospital, Morristown, N. J., and to the Mountain Side Hospital, Montclair, N. J.; Member of the Southern Surgical and Gynecological Association; Vice-president from New Jersey of the Pan-American Medical Congress of 1893; President of the Medical Society of the State of New Jersey, 1907. *Vice-president*, 1893; *President*, 1899; *Executive Council*, 1901–1903. 1002 Broad Street, Newark, N. J.

1897.—*INGRAHAM, HENRY DOWNER, M.D. Buffalo, N. Y. 1904.

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1909.—JACOBSON, JULIUS H., M.D. Professor of Gynecology and Clinical Surgery, Medical Department Toledo University; Surgeon to Lucas City Hospital; Gynecologist to St. Vincent's Hospital, Toledo. 2050 Franklin Street, Toledo, O.

Founder.—*JARVIS, GEORGE CYPRIAN, M.D. Hartford, Conn. 1900.

1894.—†JAYNE, WALTER ADDISON, M.D. Denver, Col. 1908.

1910.—JENKS, NATHAN, B. S., M. D. Lecturer on Obstetrics at the Detroit College of Medicine; Visiting Physician to the Woman's Hospital and Infant's Home; Visiting Obstetrician to the New Providence Hospital, Detroit. Residence, 231 Burns Street; Office, 271 Woodward Avenue, Detroit, Mich.

1892.—*JELKS, JAMES THOMAS, M.D. Hot Springs, Ark. 1902.

1891.—†JOHNSTON, GEORGE BEN, M. D. Richmond, Va. 1910.

1906.—JONAS, ERNST, M.D. Clinical Professor of Surgery in Washington University Medical School; Surgeon in Charge of the Surgical Clinic at the Washington University Hospital; Gynecologist to the Saint Louis Jewish Hospital; Surgeon to the Martha Parsons Free Hospital for Children. Residence, 4495 Westminster Place; Office, 465 North Taylor Avenue, Saint Louis, Mo.

1910.—JONES, ARTHUR THOMS, M. D. Visiting Gynecologist to St. Joseph's Hospital, Providence. 81 Elm Grove Avenue, Providence, R. I.

1902.—KEEFE, JOHN WILLIAM, M.D. Attending Surgeon to the Gynecological Department of St. Joseph's Hospital; Attending Surgeon to the Rhode Island Hospital; Consulting Surgeon to the Providence Lying-in Hospital. *Vice-president*, 1908. *Executive Council*, 1911. 259 Benefit Street, Providence, R. I.

1910.—KENNEDY, JAMES W., M. D. Associate Gynecologist and Obstetrician to the Philadelphia Dispensary. 1409 Spruce Street, Philadelphia, Pa.

1908.—KIRCHNER, WALTER C. G., A. B., M. D. Formerly superintendent and Surgeon in charge of the Saint Louis City Hospital. Office, Metropolitan Building, Saint Louis, Mo.

1898.—LANGFITT, WILLIAM STERLING, M.D. Surgeon in chief to St. John's Hospital. Office, 8047 Jenkins Building, Pittsburg. Pa.

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1901.—LINCOLN, WALTER RODMAN, B.A., M.D. Lecturer on Gynecology, College of Physicians and Surgeons of Cleveland. Lennox Building, corner Erie Street and Euclid Avenue, Cleveland, Ohio.

1900.—*LINVILLE, MONTGOMERY, A. B., M. D. New Castle, Pa. 1910.

1910.—LOBENSTINE, RALPH WALDO, A. B., M.D. Attending Surgeon to the Lying-in Hospital of the City of New York; Gynecologist to Bellevue Hospital Dispensary. Residence, 780 Madison Avenue; Office, 155 East Seventieth Street, New York, N. Y.

1890.—LONGYEAR, HOWARD WILLIAMS, M. D. Professor of Gynecology and Abdominal Surgery in the Detroit Post-Graduate Medical School; Clinical Professor of Gynecology in the Detroit College of Medicine; Gynecologist to Harper Hospital; Physician to the Woman's Hospital; President of the Detroit Gynecological Society, 1889; Chairman of the Section on Obstetrics and Gynecology of the Michigan State Medical Society, 1892. *Vice-president*, 1893; *President*, 1905; *Executive Council*, 1906-1908. 271 Woodward Avenue, Detroit, Mich.

Founder.—*LOTHROP, THOMAS, M.D. Buffalo, N. Y. 1902.

1910.—LOTT, HENRY STOKES, M. D. 123 Cherry Street, Winston, N. C.

1896.—LYONS, JOHN ALEXANDER, M.D. Instructor in Gynecology at the Post-Graduate Medical School; Gynecologist and Lecturer to Nurses at the Chicago Hospital. Residence, 6848 Anthony Avenue; Office, 4118 State Street, Chicago, Ill.

1891.—*MCCANN, JAMES, M.D. Pittsburg, Pa. 1893.

1898.—*MCCANN, THOMAS, M.D. Pittsburg, Pa. 1903.

1910.—MCCLELLAN, BENJAMIN BUSH, A. B., M. D. Member of the National Legislative Council of the American Medical Association. Residence, 636 South Detroit Street; Office, 7 East Second Street, Xenia, Ohio.

1910.—MCGRAW, THEODORE A., JR., A. B., M. D. Clinical Professor of Gynecology in the Detroit College of Medicine; Attending Gyneocologist to St. Mary's Hospital; Associate Gynecologist to the Providence Hospital. Residence, 1710 Jefferson Street, Office 73 Cass Street, Detroit, Mich.

Founder.—MCMURTRY, LEWIS SAMUEL, A.M., M.D., LL.D.

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Professor of Gynecology in the Hospital College of Medicine; Gynecologist to Sts. Mary and Elizabeth Hospital; Fellow of the Edinburgh Obstetrical Society; Fellow of the British Gynecological Society; Corresponding Member of the Obstetrical Society of Philadelphia and of the Gynecological Society of Boston; Member (President, 1891) of the Southern Surgical and Gynecological Association; President American Medical Association, 1905. *Executive Council*, 1891–1892, 1895–1905; *President*, 1893. Suite 542, The Atherton, Louisville, Ky.

1910.—McPHERSON, ROSS, A. B., M. D. Attending Surgeon to the Lying-in Hospital of the City of New York. Residence, 26 Grammercy Park, East; Office 20 West Fiftieth Street, New York, N. Y.

Founder.—MANTON, WALTER PORTER, M.D. Professor of Clinical Gynecology and Adjunct Professor of Obstetrics, Detroit College of Medicine; Gynecologist to Harper Hospital and the Eastern Michigan Asylum for the Insane; Vice-president of Medical Board of the Woman's Hospital and Foundling's Home; Consulting Gynecologist to the Northern Michigan Asylum and St. Joseph's Retreat; Gynecic Surgeon to the House of the Good Shepherd; President of the Detroit Academy of Medicine, 1892–1894; President of the Detroit Gynecological Society, 1890; Fellow of the British Gynecological Society; Fellow of the Royal Microscopical Society and of the Zoological Society of London. *Vice-president*, 1894. 32 Adams Avenue, W., Detroit, Mich.

Founder.—†*MAXWELL, THOMAS JEFFERSON, M.D. Keokuk, Iowa. 1902. 1905.

Founder.—MILLER, AARON BENJAMIN, M.D. Professor of Gynecology in the Medical Department of Syracuse University; Gynecologist to St. Joseph's Hospital, House of the Good Shepherd and Dispensary. *Vice-president*, 1899, 1904; *President*, 1910; *Executive Council*, 1911. 326 Montgomery Street, Syracuse, N. Y.

1905.—MILLER, JOHN D., M.D. Assistant to the Chair of Clinical Gynecology in the Medical College of Ohio, University of Cincinnati; Gynecologist to the Good Samaritan Hospital. N. E. Corner Clifton Avenue and W. McMillan Street, Cincinnati, Ohio.

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1896.—*MOONEY, FLETCHER D., M.D. Saint Louis, Mo., 1897.

1907.—MORIARTA, DOUGLAS C., M.D. Senior Surgeon to Saratoga Hospital; Surgeon in chief to Saint Christian Hospital for Children; Director of State Experimental Station at Saratoga. 511 Broadway, Saratoga Springs, N. Y.

1904.—MORRIS, LEWIS COLEMAN, M.D. Professor of Gynecology and Abdominal Surgery in the Birmingham Medical College; Secretary, Medical Association State of Alabama, 1904; Member of Jefferson County Board of Health. *Vice-president*, 1911. 1203 Empire Building, Birmingham, Ala.

1890.—MORRIS, ROBERT TUTTLE, A.M., M.D. Professor of Surgery in the New York Post-Graduate Medical School and Hospital. *Vice-president*, 1892; *Executive Council*, 1906, 1908–1911; *President*, 1907. 616 Madison Avenue, New York, N. Y.

Founder.—*MOSES, GRATZ ASHE, M.D. Saint Louis, Mo. 1901. (See Honorary Fellows.)

1894.—MURPHY, JOHN BENJAMIN, A.M., M.D. Professor of Surgery and Head of Department North Western University; Chief Surgeon to Mercy Hospital and St. Joseph's Hospital; Attending Surgeon to Wesley Hospital and Columbus Hospital; Consulting Surgeon to Alexian Brothers', Cook County Hospitals; President of the American Medical Association, 1911. Residence, 3305 Michigan Avenue; Office, 400 Reliance Building, 100 State Street, Chicago, Ill.

Founder.—†*MYERS, WILLIAM HERSCHEL, M.D. Fort Wayne, Ind. 1904. 1907. (See Honorary Fellows.)

1904.—NEWMAN, LOUIS EDWARD, A.M., M.D. President of the Saint Louis Obstetrical and Gynecological Society, 1904. 5381 Waterman Avenue, Saint Louis, Mo.

1897.—NICHOLS, WILLIAM R., M.D. 295 Edmunton Street, Winnipeg, Manitoba, Canada.

1896.—NOBLE, GEORGE HENRY, M.D. Gynecologist to the Grady Hospital; Secretary to the Section on Obstetrics and Gynecology of American Medical Association, 1897; Member of the Southern Surgical and Gynecological Association. 186 South Pryor Street, Atlanta, Ga.

1903.—NOBLE, THOMAS BENJAMIN, M.D. Professor of Abdominal Surgery in the Central College of Physicians and Sur-

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geons; Consultant in the Diseases of Women at the City Hospital, City Dispensary, and Protestant Deaconess's Hospital, Indianapolis. 427 Newton Claypool Building, Indianapolis, Ind.

1907.—OLMSTED, INGERSOLL, M.D. Surgeon to the City and St. Joseph's Hospitals, Hamilton, Ont. 215 South James St., Hamilton, Ontario, Canada.

1889.—†PAINE, JOHN FANNIN YOUNG, M.D. Galveston, Texas. 1904.

1899.—PANTZER, HUGO OTTO, M.D. Professor of Clinical Gynecology in the Indiana Medical College, Medical Department of Purdue University; Gynecologist to City Hospital, City Dispensary, St. Vincent's and Deaconess's Hospitals; Member of Indianapolis, Indiana State, Ohio Valley, Mississippi Valley, Medical Associations and Indianapolis Gynecological Association. *Executive Council*, 1907–1911. 224 North Meridian Street, Indianapolis, Ind.

1890.—PEARSON, WILLIAM LIBBY, M.D. 713 Union Street, Schenectady, N. Y.

1899.—PFAFF, ORANGE G., M.D. Adjunct Professor of Obstetrics and Diseases of Women in the Medical College of Indiana; Gynecologist to the City, Deaconess's, and St. Vincent's Hospitals. 1337 North Pennsylvania Street, Indianapolis, Ind.

1898.—PORTER, MILES F., M.D. Professor of Surgery in the Indiana Medical College, Medical Department of Purdue University; Surgeon to Hope Hospital; ex-President Indiana State Medical Society. *Vice-president*, 1902. 207 West Wayne Street, Fort Wayne, Ind.

Founder.—*POTTER, WILLIAM WARREN, M.D. Buffalo, N. Y. 1911

1903.—POUCHER, JOHN WILSON, M.D. Consulting Surgeon to Vassar Brothers Hospital, Poughkeepsie. 339 Mill Street, Poughkeepsie, N. Y.

Founder.—*PRICE, JOSEPH, M.D. Philadelphia, Pa. 1911.

1904.—REDER, FRANCIS, M.D. Chief of Clinic, Department of Rectal Diseases, Medical Department of Washington University; Surgeon to Burlington Rink. 4629 Cook Avenue, Saint Louis, Mo.

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Founder.—REED, CHARLES ALFRED LEE, A.M., M.D. Professor of Gynecology and Abdominal Surgery in the Cincinnati College of Medicine and Surgery and in the Woman's Medical College of Cincinnati; Surgeon to the Cincinnati Free Surgical Hospital for Women; Secretary-General of the First Pan-American Medical Congress, 1893; Member of the Southern Surgical and Gynecological Association; Fellow of the British Gynecological Society; President of the American Medical Association, 1901. *Executive Council*, 1890–1897; *President*, 1898. Rooms 60 and 62, The Groton, N. E. corner Seventh and Race Streets, Cincinnati, Ohio.

1905.—REES, CHARLES MAYRANT, M.D. Professor of Abdominal Surgery and Gynecology in Charleston Medical School; Member of the Medical Society of the State of South Carolina; Member of the American Medical Association and of the Southern Surgical and Gynecological Association. Residence, 169 Broad Street; Office, 98 Wentworth Street, Charleston, S. C.

1896.—*RHETT, ROBERT BARNWELL, JR., M. D. Charleston, S. C. 1901.

1889.—*ROHE, GEORGE HENRY, M.D. Baltimore, Md. 1899.

1909.—ROSENTHAL, MAURICE I., M.D. Surgeon to Saint Joseph's Hospital. 336 W. Berry Street, Fort Wayne, Ind.

1892.—*ROSENWASSER, MARCUS, M.D. Cleveland, Ohio. 1910.

1890.—ROSS, JAMES FREDERICK WILLIAM, M.D.C.M., L.R.C.P., Lond., Eng. Professor of Gynecology, University of Toronto; Chief of Gynecological Service, Toronto General Hospital; Late President Ontario Medical Association; President Academy of Medicine, Toronto; Fellow of the Edinburgh Obstetrical Society. *Executive Council*, 1892–1896, 1905–1907; *President*, 1897. 481 Sherbourne, Corner Wellesley Street, Toronto, Ont., Canada.

1902.—RUNYAN, JOSEPH PHINEAS, M.D. Division Surgeon to the Choctaw, Oklahoma and Gulf Railroad; Secretary of the Arkansas State Medical Association, President, 1904. 1514 Schiller Avenue, Little Rock, Ark.

1906.—RUTH, CHARLES EDWARD, M.D. Professor of Surgery and Clinical Surgery in the Keokuk Medical College (College of Physicians and Surgeons); Surgeon to the Chicago and Rock Island Pacific Railway. Ponce, Porto Rico.

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1903.—SADLIER, JAMES EDGAR, M.D. Consulting Surgeon to Highland Hospital, Poughkeepsie. *Vice-president*, 1909. 295 Mill Street, Poughkeepsie, N. Y.

1909.—SANES, K. ISADORE, Gynecologist to the West Penn Hospital; Consulting Gynecologist to the Montefiore Hospital, Pittsburg. Residence, 345 McKee Place; Office, Park Building, Pittsburg, Pa.

1910.—SCHILDECKER, CHARLES BUSHFIELD, M. D. Assistant Gynecologist to Western Pennsylvania Hospital; Coroner's Physician of Allegheny County. Residence 414 Rebecca Street; Office, 1105 Park Building, Pittsburg, Pa.

1904.—SCHWARZ, HENRY, M.D. Professor of Obstetrics, Medical Department of Washington University. *Vice-President*, 1911. 440 North Newstead Avenue, Saint Louis, Mo.

1901.—SCOTT, N. STONE, A.M., M.D. Professor of Surgery, College of Physicians and Surgeons, Cleveland; Consulting Surgeon to City Hospital; Consulting Surgeon to St. John's Hospital; Surgeon to the Out-patient Department of Cleveland General Hospital. Residence, 531 Prospect Avenue; Office, 603–604 Citizens' Building, Cleveland, Ohio.

1895.—SELLMAN, WILLIAM ALFRED BELT, M.D. Professor of the Diseases of Women and Children at the Baltimore University School of Medicine; Member of the Medical and Chirurgical Faculty of Maryland; also of the Baltimore Medical and Surgical Association; the Gynecological and Obstetrical Association of Baltimore; the Clinical Society; the Baltimore Journal Club; and of the American Medical Association. *Vice-president*, 1908; *Executve Council*, 1909–1910. 5 East Biddle Street, Baltimore, Md.

1889.—*SEYMOUR, WILLIAM WOTKYNS, A.B., M.D. Troy, N. Y. 1904.

1908.—SHERRILL, JOSEPH GARLAND, A.M., M.D. Professor of Surgery and Clinical Surgery at the University of Louisville. Office, Suite 542, The Atherton, Louisville, Ky.

1902.—SIMONS, MANNING, M.D. Professor of Clinical Surgery in the Medical College of the State of South Carolina; Surgeon to St. Francis Xavier's Infirmary and to the City Hospital. Residence, 22 Rutledge Avenue; Office, 111 Church Street, Charleston, S. C.

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1899.—SIMPSON, FRANK FARROW, A.B., M.D. Gynecologist to the Allegheny General Hospital; Consulting Gynecologist to the Columbia Hospital. *Vice-president*, 1906. Jenkins Building, Pittsburg, Pa.

1901.—SKEEL, ROLAND EDWARD, M.D. Associate Clinical Professor of Gynecology in Western Reserve University; Gynecologist to St. Luke's, City, and Lutheran Hospitals; Consulting Surgeon to the Lakewood Hospital. 314 Osborn Building, Cleveland, O.

1910.—SMEAD, LEWIS FREDERIC, A. B., M. D. Surgeon to St. Vincent's Hospital, Toledo. Residence, 2921 Parkwood Avenue; Office, 242 Michigan Street, Toledo, Ohio.

1891.—SMITH, CHARLES NORTH, M.D. Professor of Obstetrics and Clinical Gynecology in the Toledo Medical College; Gynecologist to St. Vincent's Hospital. *Vice-president*, 1910. 234 Michigan Street, Toledo, Ohio.

1904.—SMITH, WILLIAM S., M.D. Professor of Gynecology in the Maryland Medical College; Gynecologist to Franklin Square Hospital. 528 Hanover Street, Baltimore, Md.

1901.—STAMM, MARTIN, M.D. Professor of Operative and Clinical Surgery in the College of Physicians and Surgeons, Cleveland. 316 Napoleon Street, Fremont, Ohio.

1902.—STARK, SIGMAR, M.D. Professor of Obstetrics and Clinical Gynecology in the Cincinnati College of Medicine and Surgery; Gynecologist to the Jewish Hospital. 1108 East McMillan Street, Cincinnati, Ohio.

1908.—STEWART, DOUGLAS HUNT, M.D. Attending Surgeon at Saint Elizabeth's Hospital; Attending Gynecologist to the Red Cross Hospital. Residence, 128 West 86th Street, New York, N. Y.

Founder.—*STORRS, MELANCTHON, A.M., M.D. Hartford Conn. (See Honorary List, 1899.) 1900.

1904.—SUTCLIFFE, JOHN ASBURY, A.M., M.D. Consulting Surgeon to St. Vincent's Infirmary; Consultant in Genitourinary Diseases to the City Hospital and to the Protestant Deaconess's Hospital. Residence, 409 Central Avenue; Office, 155 East-Market Street, Indianapolis, Ind.

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1899.—SWOPE, LORENZO W., M.D. Surgeon to the Consolidated Traction Company; Chief Surgeon to Wabash Railroad, Pittsburg Division; Surgeon to Western Pennsylvania Hospital; Surgeon to Passavant Hospital; Member of the Allegheny County Medical Society; Member of the American Medical Association. Residence, 4629 Bayard Street; Office, 1105 Park Building, Pittsburg, Pa.

1908.—TALLEY, DYER FINDLEY, A.M., M.D. Associate Professor of Surgery at Birmingham Medical College; Member of State Board of Medical Examiners, State Board of Health and Board of Censors. Residence, 1808 Seventh Avenue, Birmingham, Ala.

1901.—TATE, MAGNUS ALFRED, M.D. Professor of Obstetrics Miami Medical College; President Cincinnati Academy of Medicine. 1905. 19 West Seventh Street, Cincinnati, Ohio.

Founder.—†*TAYLOR, WILLIAM HENRY, M.D., Ph.D. Cincinnati, Ohio. 1898. (See Honorary Fellows.) 1910.

1895.—†THOMPSON, FRANK DANIEL, M.D. Fort Worth, Texas. 1910.

1908.—TORRANCE, GASTON, M.D. Surgeon to Saint Vincent's and the Hillman Hospitals in Birmingham. Residence, 1626 Eleventh Avenue, South; Office, 325 Woodward Building, Birmingham, Ala.

Founder.—*TOWNSEND, FRANKLIN, A.M., M.D. Albany, N. Y. 1895.

1907.—VANCE, AP MORGAN, M.D. Surgeon to Kentucky Masonic Widow's and Orphan's Home and Infirmary; Surgeon to Saints Mary and Elizabeth Hospital, Louisville. 835 South Fourth Avenue, Louisville, Ky.

Founder.—VANDER VEER, ALBERT, A.M., M.D., Ph.D. Professor of Didactic, Clinical, and Abdominal Surgery in the Albany Medical College; Attending Surgeon to the Albany Hospital; Consulting Surgeon to St. Peter's Hospital; Fellow of the American Surgical Association (President, 1906); Fellow of the British Gynecological Society; Member of the Southern Surgical and Gynecological Association; Corresponding Member of the Boston Gynecological Society. *Executive Council*, 1889–1891, 1895–1905; *President*, 1892. 28 Eagle Street, Albany, N. Y.

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1909.—WADE, HENRY ALBERT, M.D. Surgeon to Bethany Deaconess's Hospital; Associate Gynecologist to Williamsburg Hospital, Brooklyn. 495 Greene Avenue, Brooklyn, N.Y.

1909.—WALDO, RALPH, M.D. Gynecologist to Lebanon Hospital; Associate Surgeon to the Woman's Hospital of the State of New York. 54 W. 71st Street, New York, N.Y.

1891.—WALKER, EDWIN, M.D., Ph.D. Gynecologist to the Evansville City Hospital; President of the Indiana State Medical Society, 1892; Member of the American Medical Association and of the Mississippi Valley Medical Association; Member of the Southern Surgical and Gynecological Association; First Vice-president American Medical Association, 1907. *Vice-president*, 1901. 712 South Fourth Street, Evansville, Ind.

1907.—†WALKER, HENRY ORLANDO, M.D. Detroit, Mich. 1910.

1907.—WEISS, EDWARD ALOYSIUS, M.D. Assistant Gynecologist to Mercy Hospital; Obstetrician to Roselia Maternity Hospital; Associate Professor of Gynecology at Western Pennsylvania Medical College, Pittsburg. 714 Jenkins Building, Pittsburg, Pa.

1889.—WENNING, WILLIAM HENRY, A.M., M.D. Clinical Professor of Gynecology at the Miami Medical College; Chief of Staff and Gynecologist to St. Mary's Hospital. 5 Garfield Place, Cincinnati, Ohio.

Founder.—WERDER, XAVIER OSWALD, M.D. Profsseor of Gynecology at the Western Pennsylvania Medical College (Medical Department, University of Western Pennsylvania); Consulting Gynecologist at the Allegheny General Hospital; Gynecologist to the Mercy Hospital and Pittsburg Free Dispensary; Obstetrician to the Roselia Maternity Hospital; Consulting Gynecologist to St. Francis's Hospital; Consulting Surgeon to the South Side Hospital. *Treasurer*, 1888–1911. 714 Jenkins Building, Pittsburg, Pa.

1904.—WEST, JAMES NEPHEW, M.D. Professor of Diseases of Women and Secretary of the Faculty at the New York Post-Graduate Medical School and Hospital. *Vice-president*, 1906. 71 West Forty-ninth Street, New York.

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1896.—WESTMORELAND, WILLIS FOREMAN, M.D. Professor of Surgery at the Atlanta Medical College. Suite 241, Equitable Building, Atlanta, Ga.

1897.—†WHITBECK, JOHN F. W., M.D. Rochester, N. Y. 1910.

1909.—YATES, H. WELLINGTON, M.D. Lecturer on Obstetrics at Detroit College of Medicine; Obstetrician to St. Mary's Hospital. 1360 Fort Street, Detroit, Mich.

1907.—ZIEGLER, CHARLES EDWARD, A.M., M.D. Professor of Obstetrics in the University of Pittsburg; Medical Director of the Elizabeth Steele Magee Hospital for Women; Consulting Obstetrician to the Columbia Hospital and Consulting Obstetrician and Gynecologist to the Dixmont Hospital for the Insane. 354 South Highland Avenue, Pittsburg, Pa.

1900.—ZINKE, ERNST GUSTAV, M.D. Professor of Obstetrics and Clinical Midwifery in the Medical College of Ohio, University of Cincinnati; Obstetrician and Gynecologist to the German Hospital; Obstetrician to the Maternity Hospital. *President*, 1908; *Executive Council*, 1909–1911. 4 West Seventh Street, Cincinnati, Ohio.

Total, one hundred and twenty-six Ordinary Fellows.

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MINUTES OF THE PROCEEDINGS

AT THE

TWENTY-THIRD ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

HELD AT THE

ONONDAGA, SYRACUSE, NEW YORK,

SEPTEMBER 20, 21, AND 22, 1910

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TWENTY-THIRD ANNUAL MEETING.

SEPTEMBER 20, 21 AND 22, 1910.

The following named Fellows were present:

ABRAMS, EDWARD T.	DOLLAR BAY, MICH.
BONIFIELD, CHARLES L.	CINCINNATI.
CARSTENS, J. HENRY.	DETROIT.
CHASE, WALTER B.	BROOKLYN.
CONGDON, CHARLES E.	BUFFALO.
DICE, WILLIAM G.	TOLEDO.
DICKINSON, GORDON K.	JERSEY CITY.
ERDMANN, JOHN F.	NEW YORK.
FOSTER, CURTIS S.	PITTSBURG.
FRANK, LOUIS	LOUISVILLE.
FREDERICK, CARLTON C.	BUFFALO.
GILLETTE, WILLIAM J.	TOLEDO.
HAYD, HERMAN E.	BUFFALO.
HEDGES, ELLIS W.	PLAINFIELD.
HUGGINS, RALEIGH R.	PITTSBURG.
HUMISTON, WILLIAM H.	CLEVELAND.
ILL, EDWARD J.	NEWARK.
JONES, ARTHUR T.	PROVIDENCE.
KEEFE, JOHN W.	PROVIDENCE.
LOBENSTINE, RALPH W.	NEW YORK.
LONGYEAR, HOWARD W.	DETROIT.
LOTT, HENRY S.	WINSTON.
McMURTRY, LEWIS S.	LOUISVILLE.
MILLER, AARON B.	SYRACUSE.
MILLER, JOHN D.	CINCINNATI.
MORIARTA, DOUGLAS C.	SARATOGA SPRINGS.
MORRIS, LEWIS C.	BIRMINGHAM.
MORRIS, ROBERT T.	NEW YORK.
NOBLE, THOMAS B.	INDIANAPOLIS.
PANTZER, HUGO O.	INDIANAPOLIS.
POTTER, WILLIAM W.	BUFFALO.
POUCHER, JOHN W.	POUGHKEEPSIE.

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PRICE, JOSEPH	PHILADELPHIA.
REDER, FRANCIS	SAINT LOUIS.
ROSENTHAL, MAURICE I.	FORT WAYNE.
SADLIER, JAMES E.	POUGHKEEPSIE.
SANES, K. ISADORE	PITTSBURG.
SCHILDECKER, CHARLES B.	PITTSBURG.
SCOTT, N. STONE	CLEVELAND.
SCHWARZ, HENRY	SAINT LOUIS.
SHERRILL, J. GARLAND	LOUISVILLE.
SKEEL, ROLAND E.	CLEVELAND.
SMEAD, LEWIS F.	TOLEDO.
SMITH, CHARLES N.	TOLEDO.
SWOPE, LORENZO W.	PITTSBURG.
WADE, HENRY A.	BROOKLYN.
WALDO, RALPH	NEW YORK.
YATES, H. WELLINGTON	DETROIT.
ZINKE, E. GUSTAV	CINCINNATI.

Letters and messages of regret were received from the following absent Fellows:

Honorary.—Cordes, August Elisee; Leopold, G.; Schultze, Bernhard Sigmund; Freund, William Alexander.

Corresponding.—Crozel, G.; Machell, Henry Thomas; Wright, Adam Henry.

Ordinary.—Blume, Frederick; Cannaday, John Egerton; Davis, John D. S.; Deaver, John Blair; Dorsett, Walter Blackburn; Elbrecht, Oscar H.; Ferguson, Alexander Hugh; Goldspohn, Albert; Guiteras, Ramon; Jacobson, Julius H.; Jonas, Ernst; Linville, Montgomery; Lyons, John A.; Murphy, John Benjamin; McClellan, Benjamin Bush; Porter, Miles F.; Ross, James F. W.; Stewart, Douglas H.; Skeel, Roland E.; Torrance, Gaston; Vander Veer, Albert; Werder, Xavier O.; Ziegler, Charles E.

The following-named registered guests were made members by invitation:

Babcock, A. D.	Syracuse.
Bannan, Theresa	"
Benham, F. R.	"
Breese, A. B.	"
Britten, G. S.	"
Broad, G. B.	"

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Candee, J. W.	Syracuse
Doust, H. B.	"
Easton, F. E.	"
Eusten, F. E.	"

REGISTERED GUESTS.

Flaherty, Frederick	Syracuse.
Foreman, T. F.	"
Halstead, T. H.	"
Hedden, A. W.	"
Heffron, John L.	"
Hotaling, H. S.	"
Jacobson, Nathan	"
Knoff, Frederick H.	"
Larkin, A. E.	"
Law, William F.	"
Levy, I. Harris	"
McClary, C. E.	"
Monroe, Nathan	"
Murray, D. H.	"
Potter, Philip S.	"
Price, George M.	"
Rutledge, J. M.	"
Saxer, L. A.	"
Sears, F. W.	"
Sheehan, James V.	"
Todd, J. B.	"
Vadeboncoeur, A. T.	"
Williams, M. J.	"
Wose, John W.	"
Wynkoop, E. J.	"
Ash, R. H.	Canastota, N. Y.
Ash, R. H., Jr.	Canastota, N. Y.
Austin, G. E.	Auburn, N. Y.
Burdick, H. E.	Montezuma, N. Y.
Coe, W. H.	Montezuma, N. Y.
Cosack, E. J.	Fulton, N. Y.
Cowles, J. B.	Rochester, N. Y.
Davis, Asa B.	New York, N. Y.
Fox, Frank E.	Fulton, N. Y.
Graber, S. L.	Fulton, N. Y.

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Goodwin, Clinton E.	Weedsport, N. Y.
Johnson, E. M.	Minneapolis, Minn.
Jones, W. B.	Rochester, N. Y.
Knapp, J. W.	Canastota, N. Y.
Marquis, Anna White	Norwich, N. Y.
Mitchell, John M.	Providence, R. I.
McCarty, Joseph F.	New York, N. Y.
O'Neill, L. F.	Auburn, N. Y.
Parsons, J. W.	Marcellus, N. Y.
Pierson, Sarah G.	Rochester, N. Y.
Potter, Marion C.	Rochester, N. Y.
Randall, Albert B.	Liverpool, N. Y.
Richens, L. Belle	Auburn, N. Y.
Rood, A. B.	Minoa, N. Y.
Rougy, A. J.	New York, N. Y.
Sanberger, S. J.	Cortland, N. Y.
Schildecker, C. B.	Pittsburg, Pa.
Seccomb, M. L.	Auburn, N. Y.
Slingerland, I. M.	Fayetteville, N. Y.
Slocum, F. W.	Camillus, N. Y.
Spurney, A. T.	Cleveland, O.
Titus, Philip	Ft. Wayne, Ind.
Warne, J. W.	Skaneateles, N. Y.
Whitford, William	Chicago, Ill.

FIRST DAY, *Tuesday, September* 20, 1910.

Morning Session.—The Association met at the Onondaga Hotel at 9.30 A. M., and was called to order by the President, Dr. Aaron B. Miller, Syracuse, New York.

In the absence of Hon. Edward Schoeneck, Mayor of Syracuse, who was to have delivered an address of welcome on behalf of the City, this pleasant duty was delegated to Mr. Rubin, Assistant Corporation Counsel.

ADDRESS OF WELCOME BY MR. RUBIN.

Mr. President and Gentlemen: I regret very much the inability of the Mayor to be here, but up to the last minute he made every effort possible to be with you, as he appreciated fully what this convention means, and he wanted to tell you how glad he was, as the Mayor of this City, to welcome you.

We as a city appreciate your coming and holding your conven-

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tion with us. Personally, I want to say to you that everybody in Syracuse is delighted to have you with us. We appreciate this association because we realize it is a convention of the utmost importance. It is one that may and undoubtedly will do much for the benefit of humanity in general. I realize, and so do the citizens of Syracuse appreciate, that you are assembled here not because of any financial advantage that it may bring you, but it is simply to commune with one another, to be benefited if that is possible by getting views on the various subjects from different members of your profession, and in that way putting what information or knowledge you receive into practice when you return to your own homes or constituencies. Syracuse is glad to have a convention of this importance here. It is one of the great educational cities of the country. We have one of the greatest universities in the country. We have here in connection with that university a strong medical college.

We believe we have a beautiful city, which you cannot fail to appreciate. We want you to take advantage of everything the city offers. We want you to come and visit the university. We have a magnificant institution. We have a great faculty and a great student body. We expect, before the week is over, upward of 4000 students will have registered at the university, and, above all, we want you to see the stadium, and if your business can be prolonged until after Saturday we want you to come and, see our football team play.

In behalf of the Mayor and the citizens of Syracuse we are glad you came. We hope you will come again. We hope this convention will be profitable. We hope you will enjoy every minute of it and we trust you will come again because you will find that we are exceedingly hospitable. I wish you all Godspeed. I hope the people will be benefited by the result of your work, and that you yourselves will not only profit by it financially, but in every other respect, because your labors will mean the advancement of your special line of work. Gentlemen, I thank you for your attention. (Applause.)

ADDRESS OF WELCOME BY DR. J. L. HEFFRON, DEAN OF THE MEDICAL DEPARTMENT OF SYRACUSE UNIVERSITY.

Mr. President and Fellows of the American Association of Obstetricians and Gynecologists: It is a great pleasure to welcome you to this town of some importance in the medical field on the part of a united profession of this city. Your coming to us is op-

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portune. We are hardly through with entertaining the many people who came to the State Fair. We always have an open heart that bids welcome to every member of the profession who comes to us with a message or who shares his observation and experience with us. Your meetings happily show the simple and sane methods of the scientist and some of the remarkable advancements that have been made since the era of experimental medicine has dawned. There are those who are bitterly opposed to vivisection, and who look upon a laboratory in which experiments on animals are carried on as a chamber of horrors. It is those who mislead the general public. They belong to the emotional class and appeal for sympathy. Such people are not among those to which the methods of science can in any way appeal. They are not competent to observe accurately and to collect the results of a long series of observations patiently and accept such deductions as lead unerringly to the truth. Ignorance and prejudice in regard to vivisection should not survive much longer, but should be dispelled by the light of science, driving away darkness and error, and presenting the truth. By means of animal experimentation we have seen discoveries made which have been the means of saving thousands of human lives. It was one of your own members who demonstrated that penetrating gunshot wounds of the abdominal viscera need not be fatal if treated promptly and skilfully. At this meeting we anticipate more developments from you along the same line.

We welcome you to our city, to our homes, to our university, and to its college of medicine, and we are ready to serve you in every way that is in our power. (Applause.)

RESPONSE BY DR. CHARLES N. SMITH.

Mr. President, Mr. Rubin, Dr. Heffron, and Fellows of the Association: It is with the utmost sincerity that this association expresses its appreciation of your efforts of the welcome to the city of Syracuse that you and your citizens and our professional brethren have so kindly extended to us. As a professional organization, with purely scientific purposes, the American Association of Obstetricians and Gynecologists has established a reputation for productive and continuous work of a high standard of excellence which is compared to that of similar bodies. We are justly proud of our achievements in the past and are more ambitious for progress in the future. To our meetings every Fellow brings his suggestions and conclusions based upon and drawn from his own

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observations and investigations. We bring them, one might say, to the surgical clearing house where subject to criticism the suggestions of our Fellows' opinions are finally balanced and full credit is given to all. From the starting of the ball until the final word has been said in the discussion of the last paper on the program, we are prone to forget the less serious scientific problems and procedures which are presented for our consideration, endorsement, or criticism.

The program for this meeting promises well, and with the discussions which we think the papers are certain to provoke, it would seem as if this meeting will be comparable with, if not excel, our most successful meetings in the past. However, moments of relaxation assure better hours of labor, and we thank you for the relaxation, for the entertainment, for the hospitality which you have so kindly and so generously placed at our disposal, and we assure you that the demands of our scientific labors shall not prevent us from availing ourselves of your many offers. (Applause.)

Dr. Albert E. Larkin, Chairman of the Local Committee of Arrangements, stated that the profession of the city desired to entertain the members of the association at a luncheon to-morrow (Wednesday) afternoon, at 12.30, at the Onondaga Golf and Country Club. In the evening at 8 o'clock the annual banquet would be held.

Papers were then read as follows:

1. "Present Status of the Colon Tube," by H. Wellington Yates, Detroit.

This paper was discussed by Drs.McMurtry, Sherrill, Frank, Reder, Price, and the discussion was closed by the essayist.

2. "Diagnosis of Chronic Surgical Lesions in the Upper Abdomen," by Charles N. Smith, Toledo.

Discussed by Drs. Robert T. Morris, Price, Skeel, and in closing by the author of the paper.

3. "Problems in Uterine Cancer," by Walter B. Chase, Brooklyn.

4. "Statistical Study of Cancer in the Female," by K. Isadore Sanes, Pittsburg.

These two papers were discussed together by Drs. Humiston, Waldo, Rosenthal, Carstens, Noble, Price, Reder, Ill, and the discussion closed by Drs. Chase and Sanes.

On motion, the Association then took a recess until 2.30 P. M.

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Afternoon Session, 2.30 O'clock.

The President in the Chair.

5. "Treatment of Obstruction of the Bowels due to Malignant Neoplasm," by Maurice I. Rosenthal, Fort Wayne.

Discussed by Drs. Carstens, Skeel, Reder, Frederick, Price, Jacobson, Frank, and in closing by the author of the paper.

6. "Diagnosis of Tubal Abortion and Rupture," by Charles E. Congdon, Buffalo.

7. "Results at Lebanon Hospital on Deferred Operations for Extrauterine Pregnancy," by Ralph Waldo, New York.

These two papers were discussed together by Drs. Smead, Longyear, Carstens, Humiston, Lott, Sherrill, Zinke, McMurtry, Bonifield, Chase, Price, and the discussion closed by Drs. Congdon and Waldo.

8. "Tumors of the Bladder," by John F. Erdmann, and Joseph F. McCarthy, New York.

Discussed by Drs. Sadlier, McCarthy, Poucher, Keefe, Frank, and discussion closed by Dr. McCarthy.

On motion, the Association took a recess until 7.30 P. M.

Evening Session, 7.30 p. m.

The President in the Chair.

As the first order of business was the delivery of the President's address, the First Vice-President, Dr. Charles N. Smith, Toledo, took the chair, and President Aaron B. Miller, Syracuse, delivered his address. He selected for his subject "Gynecology."

9. "Puerperal Wound Intoxication and Wound Infections: A Historical and Critical Review of Childbed Fever, Illustrated by Stereopticon Slides," by Henry Schwarz, Saint Louis.

10. "Serum Therapy and Bacterial Vaccines in the Treatment of Puerperal Septicemia," by Henry Schwarz, Saint Louis.

These two papers were discussed by Drs. Zinke, Carstens, Sears, Bannan, Price, Skeel, Zinke, and the discussion closed by Dr. Schwarz.

On motion, the Association took a recess until 9.00 A. M. Wednesday.

SECOND DAY, *September* 21, 1910.

Morning Session.—The Association met at 9.00 A. M. with the President in the Chair.

11. "Adenocarcinoma of the Kidney with Report of a Case," by J. Garland Sherrill, Louisville.

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At this juncture, the First Vice-President took the chair.

The paper of Dr. Sherrill was discussed by Drs. Erdmann, McMurtry, and in closing by the author of the paper.

12. "The Breast of the Expectant Mother; its Care Before and During the Period of Lactation," by Francis Reder, Saint Louis.

Discussed by Drs. Bannan, Dice, Rongy, Carstens, and in closing by the essayist.

13. "Acute Pancreatitis," by John W. Poucher, Poughkeepsie.

14. "Acute Hemorrhagic Pancreatitis," by John W. Keefe, Providence.

These two papers were discussed together by Drs. Morris, Frank, Smith, Erdmann, Pantzer, and the discussion closed by the authors of the papers.

15. "Two cases of Perforative Gastric Ulcer," by Thomas B. Noble, Indianapolis.

Discussed by Drs. Bonifield, Carstens, Skeel, and discussion closed by the essayist.

16. "Importance of Public and Private Hospitals in the Education of Young Physicians and Nurses, and the Clinical Instruction of Practitioners," by Joseph Price, Philadelphia.

At the conclusion of Dr. Price's paper, on motion, the Association took a recess until 2.30 P. M.

Afternoon Session, 2.30 O'clock.

The President in the Chair.

17. "Torsion of the Great Omentum," by William J. Gillette, Toledo.

18. "Pelvic Reflexes," by Robert T. Morris, New York.

The paper of Dr. Morris was discussed by Dr. Huggins.

19. "Secondary Repair of Pelvic Perineal Lacerations; the Technic and Results," by Edward J. Ill, Newark.

Discussed by Drs. Hayd, Rosenthal, Longyear, Morris, and in closing by the author of the paper.

20. "Symposium on Cesarean Section."

a. "Cesarean Section; the Pregnant Uterus being within an Umbilical Hernia," by J. Henry Carstens, Detroit.

b. "High Operation in Cesarean Section, illustrated by a Case Report." by William H. Humiston, Cleveland.

c. "Cesarean Section by a Small Median Incision above the Umbilicus," by Asa B. Davis, (by invitation), New York City.

The discussion of this symposium was opened by Dr. Zinke,

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and continued by Drs. Schwarz, Dice, Sherrill, Sears, Hedges, Noble, Smith, Morris (Lewis C.), Rosenthal, and the discussion closed by the authors of the papers.

21. "Intussusception in Infants," by Herman E. Hayd, Buffalo.

Discussed by Dr. Erdmann.

On motion, the Association took a recess until 9.30 A. M., Thursday.

THIRD DAY, *September* 22, 1910.

Morning Session.—The Association met at 9.30 A. M., with the President in the chair.

22. "Conservatism in Operations upon the Uterine Appendages," by Lewis C. Morris, Birmingham.

Discussed by Drs. Jones, Sanes, Pantzer, Hedges, Lott, Frederick, Miller, Skeel, and in closing by the author of the paper.

23. "Intravenous Injection of Magnesia Sulphate in Bacteriemia," by Raleigh R. Huggins, Pittsburg.

Discussed by Drs. Schwarz, Dice, and in closing by the essayist.

24. "Fibromyomata of the Uterus Complicating Pregnancy, Labor, and the Puerperium," by Ralph Waldo Lobenstine, New York.

Discussed by Drs. Zinke, Reder, Smead, Sanes, Miller, Noble, Bannan, Smith, Morris (Lewis C.), and in closing by Dr. Lobenstine.

25. "Two Right-sided Femoral Hernias, Coexisting in the Same Patient," by N. Stone Scott, Cleveland.

26. "Comparative Merits of Medical and Surgical Treatment in the Reduction of Maternal and Fetal Mortality in Puerperal Eclampsia," by E. Gustav Zinke, Cincinnati.

This paper was discussed by Drs. Miller, Schwarz, Sanes, Yates, Rees, and in closing by Dr. Zinke.

RESOLUTIONS OF THANKS.

SECRETARY POTTER stated that the Executive Council had requested him to present the following votes of thanks to those who had contributed in a greater or less degree to the success of this meeting, who are not members, but who are among the progressive citizens of Syracuse.

Resolved, That the thanks of the American Association of Obstetricians and Gynecologists be and are hereby tender to the

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medical profession of the City of Syracuse and the County of Onondaga for their courteous treatment and attendance upon our meetings from beginning to end; also for the luncheon tendered the Association and its guests at the Onondaga Golf and Country Club.

Resolved, That the thanks of the American Association of Obstetricians and Gynecologists be and are hereby tendered to the Committee of Arrangements, Dr. Albert E. Larkin, Chairman, Dr. George B. Broad, Dr. Frederick Flaherty, and Dr. A. S. Hotaling, who have in so many ways contributed to the success of this meeting by their active cooperation with the officers and general interest in its progress, not only since the meeting convened, but in promoting its welfare during several weeks beforehand.

Resolved, That the thanks of the American Association of Obstetricians and Gynecologists be and are hereby tendered to the members of the medical profession who kindly donated the use of their automobiles for the visit to the Golf and Country Club on the twenty-first instant.

Resolved, That the thanks of the American Association of Obstetricians and Gynecologists be and are hereby tendered to the Clinton Lithia Springs Company for the contribution of products of the springs for the health and benefit of the members.

Resolved, That the thanks of the American Association of Obstetricians and Gynecologists be and are hereby tendered to Dr. Theresa Bannan for her kindness in facilitating the work of the Association in many ways and in particular by engrossing the names of the speakers on the blackboard.

Resolved, That the thanks of the American Association of Obstetricians and Gynecologists be and are hereby tendered to the Franklin Automobile Company of Syracuse for the tender of a drive in their motor cars after the adjournment Thursday afternoon, September, 22, 1910.

Resolved, That the thanks of the American Association of Obstetricians and Gynecologists be and are hereby tendered to Mr. Proctor C. Welch, Manager, and his staff of Hotel Onondaga for the interest they have taken in contributing to the comfort of the members in various ways, and especially for the use of the Hiawatha room and for its care during the sessions of our annual meeting, September 20, 21, and 22, 1910.

Resolved, That the thanks of the American Association of Obstetricians and Gynecologists be and are hereby tendered to the

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city newspaper press for the interest they have taken in presenting reports of our meetings from day to day.

On motion of Secretary Potter, the resolutions were seconded by several and adopted unanimously.

RESOLUTIONS OF CONDOLENCE.

Extract from the Minutes.

THE SECRETARY.—Since this meeting convened the officers have been notified of the death of one of our honored members, and it is fitting that action should be taken before we adjourn. Drs. Humiston and Skeel were requested to take the matter into consideration and present some formal resolutions relating to the event, which they have done, and it becomes my duty to read them:

Resolved, That the American Association of Obstetricians and Gynecologists learned with grief of the death of Dr. Marcus Rosenwasser, which occurred at his home in Cleveland, September 4, 1910, at the age of 64 years; and we desire to express our sorrow at the loss of this distinguished Fellow, whose contributions to our transactions have always met with marked attention and are among our most valued archives.

Resolved, That the secretary be requested to transmit this action to Dr. Rosenwasser's family.

On motion of Dr. Potter, seconded by Drs. Smith and Schwarz, the resolutions were adopted by rising vote.

The Secretary read a telegram from Dr. Alexander Hugh Ferguson, Chicago, inviting the Association to hold its next meeting in Chicago, and in connection with the reading of the telegram said: I do not presume that Dr. Ferguson took into account the fact that in time we are one hour ahead of Chicago, and the telegram of Dr. Ferguson came too late to be considered, as the place of next meeting had already been determined upon.

In accordance with custom, the following papers were read by title and ordered published in the Transactions:

"Recent Advances in the Technic of the Radical Abdominal Operation for Uterine Cancer," by Julius H. Jacobson, Toledo.

"Absence of Pelvic Organs; Report of a Case," by Montgomery Linville, New Castle, Pa.

"Advantages of Suprapubic Cystotomy in Certain Surgical Conditions of the Urinary Bladder," by J. Egerton Cannaday, Charleston, W. Va.

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"Puerperal Tussis," by Douglas H. Stewart, New York.

"Formation of a New Vagina (Original)," by Alexander Hugh Ferguson, Chicago.

"Blood Transfusion in Pellagra," by John D. S. Davis, Birmingham.

"Radical Treatment of Procidentia Uteri and Prolapsus Recti," by John B. Murphy, Chicago.

"What Has Been Accomplished by our Association," by A. Vander Veer, Albany.

"Fibroid Uterus with Special Reference to Degenerative Changes," by John B. Deaver, of Philadelphia.

"A Word of Warning in the use of Atropin," by Ernst Jonas, St. Louis.

"Appendicitis," by Charles L. Bonifield, Cincinnati.

"Observations on Vaginal Celiotomy and Its Field of Usefulness," by Samuel W. Bandler, New York.

"Treatment of the Pregnant Adherent Retroflexed Uterus; with report of two cases," by Xavier O. Werder, Pittsburg.

"Relation of Visceral Ptoses to Neurasthenia," by Lewis S. McMurtry, Louisville.

INSTALLATION OF OFFICERS.

In the absence of President-elect Hayd, Drs. Henry Schwarz, First Vice-President, and John W. Keefe, Councilor, were escorted to the platform by Dr. Charles N. Smith.

President Miller said: As passing President of this association my feelings are different on this occasion from what they were when I was inducted into this office. It was with a good deal of anxiety on my part when it was announced in the Syracuse papers that Dr. Miller, of Syracuse, had been elected to preside over this body and its deliberations, and the fact that Syracuse was selected as the place of meeting. When the papers, as already stated, came out and said Chancellor Day was anxious for us to meet here and would speak to us I was heartily in sympathy. If I ever felt my insignificance it was certainly in anticipation of presiding over the deliberations of this meeting when we have so many distinguished men that could have done it more ably and efficiently than I.

I wish to thank the fellows for their ready response to contribute papers and for the hearty cooperation they have shown us in our deliberations here.

I cannot express to you what I feel in connection with the able

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and efficient work which our local committee has done. If this meeting appeals to you as it does to me, it has been a very successful one. It seems to me, our time has been well spent.

I congratulate you on the officers you have selected, and in the absence of President Hayd, I take great pleasure in handing this gavel to you, Dr. Schwarz, as the First Vice-President. (Applause.)

DR. SCHWARZ said: I regret very much that President-elect, Dr. Hayd, is not here. But I assure you that President Hayd will do his very best, and his very best is great, as you all know, to equal the record that Dr. Miller has made as President of this association. When they left the dining room last night both Dr. Hayd and the gentleman from Louisville said, These men in Syracuse have set us a pace which will be hard to live up to, but we will try to do this, and as Joe Price would say, "Angels can do no more." I can assure you of a successful meeting in Louisville next year, and I hope, Dr. Miller, you will be with us and have as good a time as we have had here. (Applause.)

DR. ZINKE.—We have expressed our gratitude to the medical profession and citizens of the Onondaga Country and Golf Club, and it only remains now to put one laurel upon the bald head of our modest and retiring President. I want to tell you, Dr. Miller, that every man and woman who has attended this meeting, and especially those who are familiar with the meetings in the past, consider this meeting one of the brightest jewels in the diadem of this association. (Applause.)

There being no further business to come before the meeting, on motion, the association adjourned to meet in Louisville on the fourth Tuesday in September, 1911.

WILLIAM WARREN POTTER,
Secretary.

EXECUTIVE SESSIONS.

Monday, September 19, 1910.

The President in the Chair.

There were present Drs. Miller, Zinke, Smith, McMurtry, and the Secretary, Dr. Potter.

On behalf of the Excutive Council, the Secretary presented the names of the following candidates for fellowship: William Gordon Dice, Toledo; Curtis Smiley Foster, Pittsburg; Arthur

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Thoms Jones, Providence; Ralph Waldo Lobenstine, New York; Henry Stokes Lott, Winston, N. C.; Ross McPherson, New York; Lewis Frederic Smead, Toledo.

It was moved by Dr. Smith, seconded by Dr. Zinke, that these gentlemen be recommended by the Executive Council to the association for election. Carried.

The Secretary stated that Dr. Charles A. L. Reed had nominated for honorary fellowship Professor Demitrij d'Ott, President of the Fifth International Congress of Obstetrics and Gynecology.

It was moved by Dr. Potter, seconded by Dr. Zinke, that Professor Dimitrij de'Ott be recommended by the Executive Council to the association for election of honorary fellowship. Carried.

The Secretary presented a communication with reference to the Panama Exposition by the World's Panama Exposition Company, and on motion of Dr. Zinke the communication was received and the Secretary instructed to acknowledge its receipt.

The Secretary brought before the Executive Council the case of Dr. Asdale, one of the Fellows, who on account of illness and unfortunate financial investments, was not able to pay dues.

Dr. Smith moved that Dr. McMurtry and Dr. Potter be appointed as a committee to prepare an amendment to the Constituion covering this and similar cases that may come up in the future, and report at the session of the Executive Council tomorrow.

Seconded and carried.

On motion, the Executive Council then adjourned.

Tuesday, September 20, 1910.

The President in the Chair.

On behalf of the Executive Council, the Secretary presented a list of applicants for Fellowship, after which the association elected by ballot the following-named candidates: William Gordon Dice, Toledo; Curtis Smiley Foster, Pittsburg; Arthur Thoms Jones, Providence; Henry Stokes Lott, Winston, N. C.; Ross McPherson, New York; Lewis Frederic Smead, Toledo.

The financial reports of the Secretary and Treasurer were presented and referred to an Auditing Committee appointed by the President, consisting of Drs. Sadlier and Poucher.

On motion, the Executive Session adjourned to meet at 5.30 P. M., Wednesday, immediately after the adjournment of the scientific session.

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Wednesday, September 21, 1910.

The Executive Session was called to order by the President immediately after the adjournment of the Scientific Session 5.30 P. M.

The Auditing Committee reported having examined the accounts of the Secretary and Treasurer and had found them correct, with a balance of $191.86 in the treasury.

On motion, the report was adopted.

The Secretary presented an additional list of applications for Fellowship, after which the association elected by ballot the following-named candidates: Charles B. Schildecker, Pittsburg; Theodore A. McGraw, Jr., Detroit; Nathan Jenks, Detroit; Benjamin R. McClellan, Xenia; J. W. Kennedy, Philadelphia; James A. Harrar, New York; Isador L. Hill, New York.

The Secretary called attention to the fact that the Detroit Lancet wishes to have the association take action with reference to a national department of public health.

The Secretary said that he did not know what his duties were in this matter.

Dr. McMurtry stated that every medical organization in the country was endorsing this movement, and it was merely a matter of routine; that just a mere motion by the association endorsing the movement would be sufficient.

Accordingly, it was moved by Dr. Frank, and seconded by Dr. Carstens, that the resolution be adopted. Carried.

The Secretary stated that the committee, to which was referred the proposition with reference to retired members who may have become decrepit or unable to pay dues as they accumulate from year to year, desired to report the following amendment to the Constitution:

Resolved, That the Constitution be so amended as to provide for retired membership which shall include those Fellows who have become aged or otherwise invalided and unable to meet the yearly demands of dues. The members of this association shall consist of Ordinary Fellows, Honorary Fellows, Corresponding Fellows, and Senior Fellows.

The By-laws should state that "Senior Fellows shall not be required to pay dues or hold office, but shall have all other privileges of Ordinary Fellows," to make the financial section of the By-laws bear out this amendment to the Constitution.

After an explanation by Dr. McMurtry of the cause for this

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amendment to the Constitution, the President said the amendment would lie over until next year.

The next order was the election of officers, which resulted as follows: President, Herman E. Hayd, Buffalo; First Vice-President, Henry Schwarz, St. Louis; Second Vice-President, Lewis C. Morris, Birmingham; Secretary, William Warren Potter, Buffalo, reelected; Treasurer, X. O. Werder, Pittsburg, reelected; Councilors, to fill unexpiring terms, Aaron B. Miller, Syracuse, and John W. Keefe, Providence.

When the place of meeting came up for consideration, Dr. Charles N. Smith extended an invitation to hold the next meeting in Toledo. Dr. Frank extended a similar invitation for the association to hold its next meeting in Louisville.

Toledo and Louisville were balloted on, with the result that Louisville received twenty-four votes and Toledo nine.

Dr. Smith moved that the selection of Louisville be made unanimous.

Seconded and carried.

Accordingly, Louisville was declared as the place for holding the next annual meeting.

Regarding the time for holding the meeting, the Secretary stated that he had sent out 115 double postal cards. Of this number he had received sixty-four replies, and of this number forty-four were stand-patters, or those who said the third Tuesday in September suited them; nine voted for October; three for November; four for August, and one for June. There were a few scattering votes which he did not count.

On motion of Dr. McMurtry, the fourth Tuesday in September was selected as the time for holding the next meeting.

The Secretary stated that the Executive Council had instructed him to present the name of Professor Demitrij de Ott, President of the Fifth International Congress of Obstetrics and Gynecology for Honorary Membership, as nominated by Dr. Charles A. L. Reed.

On motion, the Secretary was instructed to cast an affirmative ballot of the association for the election of Professor Demitrij d'Ott to Honorary Fellowship, which he did, and this gentleman was declared duly elected.

As there was no other business to come before the meeting, the Executive Session adjourned *sine die*.

WILLIAM WARREN POTTER,
Secretary.

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PAPERS

READ AT THE

TWENTY-THIRD ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

HELD AT THE

ONONDAGA, SYRACUSE, NEW YORK,

SEPTEMBER 20, 21, AND 22, 1910

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THE PRESIDENT'S ADDRESS.

OBSTETRICS AND MODERN GYNECOLOGY.

BY

AARON A. MILLER, M. D.,

Professor of Gynecology, College of Medicine, Syracuse University; President of American Association of Obstetricians and Gynecologists; Gynecologist of St. Joseph's Hospital, Etc., Etc.

Syracuse, N. Y.

ANOTHER year has passed and we meet again in annual session, to exploit our opinions on subjects prescribed by our constitution, relating to obstetrics, gynecology, and abdominal surgery. This association is composed of men trained especially in these departments, and the purpose of this meeting is to glean from the experiences of our associates the advances that have taken place during the past year in affections in these special fields, and to herald them to the world through the medical press and our transactions, for the benefit of the human sufferer.

That we should not enter lightly upon the deliberations of the subjects that come before us, I know is the feeling of every Fellow of the Association. As torch-bearers we should proceed with such caution that all who read may be profited. The recommendations here made should tend by their precepts to lessen suffering and prolong lives.

The scope of our work has gradually increased since the knowledge of bacteriology has illumined our way to a more accurate diagnosis, and given us a known pathology. Time is so fleeting that it seems but yesterday that these results were attained, while in reality it is within the memory of the founders of this association. In 1882, I heard J. Marion Sims, a pioneer American gynecologist, make this statement in an address before the learned medical profession of Baltimore: "I believe it will become possible to open the abdomen in gunshot and stab wounds, to repair and thereby lessen the mortality attending these injuries." He was listened to with rapt attention; some of his hearers had made history by their surgical ability. At the close of his address, the president of the meeting called for opinions referable to his prophecy. There was no reply until

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the student bodies present, as in one voice, called for Julian Chisholm, an opthalmologist, who had been an army surgeon of wide experience, to respond. He was a modest man of a retiring disposition, and he did so reluctantly.

Sims had just returned from France where he had been surgeon to the imperial household and the nobility. With his white locks, erect figure, *suaviter in modo*, and free command of the English language, he made a marked impression. The strong, forceful manner of Chisholm, with his silver-tongued oratory, at once found lodgment with the audience, and all that Sims had said in support of abdominal exploratory inspection and treatment, was obliterated from the memory of his hearers by the clean-cut and forceful statements of Chisholm. A key to unlock the hidden mysteries buried in the recesses and caverns of the human anatomy, where speculations alone had been rife, was dangling unseen at the finger tips of Sims. In his master mind the seeds of advancement had taken lodgment; his observations and associations abroad had given him a foresight into the possibilities of the future, the possibility of surgery becoming a science, founded on findings that were indisputable.

With the advent of bacteriology came a new school of surgeons, whose knowledge was founded on facts, not theories, and like the mariner who consults his compass, had known laws to direct them. The field of gynecology, the pelvis, with the abdomen appended, was their hunting-ground, and like an army marching to victory the field was soon taken. Now all the organs of these cavities have felt the results of advancement, and have yielded of their pathology abundantly; aye, and not pathology alone, for the organs of this casket have even been maimed and sacrificed in their healthy state for reasons that at times would have shocked Hippocrates; and it should arouse each one of us, as it is the purpose of this association according to our constitution, to advance the knowledge of obstetrics, gynecology, and abdominal surgery to its highest scientific attainment, to enlighten the general practitioner in all matters pertaining to these different departments, by eliminating the erroneous teachings, and accentuating the essential; "to stamp with approval all real merit, and extinguish sham."

The inception of this association came at a time when erroneous opinions still existed regarding the etiology and pathology of many diseases of the abdomen and pelvis, and the treatment was illy directed and limited in consequence. Then, as now, the

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greater percentage of diseases of the pelvis were inflammatory, and then their origin was unknown. With the advent of bacteriology, the pathology of inflammatory troubles became known, the diagnosis confirmed, and rational treatment in this class of cases was instituted, as far as surgical methods were concerned. All that had been done previous to this period was founded on fallacy.

The knowledge of the real etiology robbed surgery of its terrors, and opened the pelvic and abdominal fields for investigation through a perfected technic, with but little fear of serious consequences attending thorough exploration, thereby revealing the living pathology, and rendering arrest or elimination of disease possible. This was a great advance forward, but as these organs have to be considered not only from the standpoint of organized pathology, but the elimination of conditions that arrest their normal development and physiological functioning, there still remain problems for solution—conditions that should not be considered from end results, but from the standpoint of the purpose of medicine to prevent diseases, and keep the human body in a state of perfect development.

Not only those that are doing special work in gynecology, but the general practitioners as well, are looking to us for the solution of unsettled questions in the departments this association represents. In the obstetrical art, marked results have been obtained through the knowledge of infection. From a heavy death-rate following confinement from these causes, the technic carried out in hospital practice has almost eliminated the mortality. It is to be regretted that conditions outside of institutional care have not been attended by similar results. Here the death-rate still is appalling, showing, if any, but slight improvement since the etiology of infection has become known. This should cause us to pause and inquire why these conditions exist, and if there is not a remedy.

THE PUERPERAL WOMAN.

The hospital environment having nearly eradicated puerperal disease through asepsis, the known cause in the home is the lack of asepsis. The solution then resolves itself into knowledge or ignorance, cleanliness or filth, in the care of the parturient. Investigations prove that the greatest source of infection is introduced into the birth canal through the vagina; the germs lurk about the vulva of the patient, or on the hands of the attend-

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ant. From the vulva they are carried in by examination and, if on the hands of the attendant, through inattention to the known laws of asepsis. Williams says the greatest advancement in the department of obstetrics, "is the elimination of vaginal examinations and the recognition of pregnant conditions through external means"; that a more thorough diagnosis can be made by these methods than by any other, and the danger of carrying infection by digital examination is eliminated.

The mortality attending confinement must diminish, for the medical man of the present has the knowledge of prevention of infection, and only carelessness or indifference can be his excuse. The attendance upon this class of cases by incompetent midwives, and the high mortality attending their service, is a reflection upon the medical profession, though there is no uniform law of requirement for midwives in this country. It is to be hoped that legislation will soon correct this great source of wrong, by establishing and demanding a course of study that will make them thoroughly proficient, if there is any excuse for their existence, or their practice is to be tolerated. Child-bearing, this greatest industry of human existence, should be protected by every known means, and not only attendants be required to know the laws of asepsis, but should be held accountable for their practice. As Lord Lister said in 1871, "The sooner the laws of asepsis are recognized and practised, the better it will be for humanity."

Public feeling has changed regarding the environment of the modern hospital, and the tendency is growing to accept protection here against serious consequences during parturition. This should be encouraged, for it is not only a means of saving life and preventing serious sequelæ to those that avail themselves of the advantages, but is a source of extending education to less fortunate ones. The hospital offers equal protection to the patient without means who lives in squalor as it does to the one of wealth surrounded by luxury.

There is still another means of contamination; many women at the approach of parturition are taught to anoint themselves, or use douches. These practices are unncessary and unsanitary, often harmful, and may even be the means of fatal termination. The lubrications will only benefit through mental therapy, and the use of the douche, which is so common a practice with all classes, can be an agent for good only when advocated by the physician for diseased conditions. Nature is so kind in providing

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the vagina with germicidal action, that it may be questioned if the douche ever benefits.

We owe much to Pasteur and Lister for the knowledge of germ diseases and their treatment, but as prevention is not always possible, he who introduces a means of positive cure in these affections deserves a still greater reward. Serum therapy offers much and may be the means of solving the problem. With a known etology, our faith tells us time will produce the master hand, but until then every method of arresting infection should be practised; the greatest known means is prophylaxis.

Many theories have been advanced as to the etiology of eclampsia and the toxemias of pregnancy. In the multiplicity of causes given, the most must be wrong, some right. It is to be deplored that the treatment founded on the findings has not materially lessened the mortality. Through the thorough investigation in progress at present, may we hope for more enlightenment in the near future; may some means be recognized to stay these affections that have so long withstood the hand of progress!

GYNECOLOGY.

In the field of gynecology the disease that stands as a lone sentinel against the advance of science, yielding not its etiology, is cancer. Having existed since the early history of medicine, it has withstood all investigation; while all forms of maladies have crumbled in ruins about it it has continued its ravages, until many thousand people in the United States are dying annually of this disease. Confined to the pelvic organs, it has its inception for the most part in the cervical part of the womb, and we are taught, and are teaching, that it is due to the lacerations that have taken place in childbirth or from some traumatic cause; and it would seem rational that lines of treatment (while we are waiting for a known etiology) be carried out on the same lines advocated in other parts of the body.

Cancer of the breast, recognized and treated in its inception by early operation, has given a greater percentage of cures and materially lessened mortality.

In the stomach, Moynihan is teaching us, in his "Pathology of the Living," to recognize the significance of symptoms earlier. It is the consensus of opinion that cancer here has its origin on the site of an ulcer. Prophylactic treatment pre-

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vents the cancer by curing the ulcer. Prophylaxis must be introduced in the prevention of cancer of the womb by early repair of lacerations. Much discussion is taking place regarding the etiology, prevalence, and ravages of this disease. The symptoms are so suggestive of the pathology of the living in this class of cases that the first knock at the door should arouse suspicions of its presence and lead to a conclusion through investigation. While similar symptoms might be present in so many conditions, it would be good detective work to apprehend the thief before the work of destruction is so far advanced, and thereby save a life. In many instances the symptoms are so masked that suspicion of the disease is not excited; more often the symptoms fall upon deaf ears—"None are so deaf as those that will not hear."

Traumatism being the accepted factor in inducing cancer in the breast and cancer following upon or secondary to lesions in the viscera, as stomach, gall-bladder, pancreas, lips, and the like, by analogy, its increased frequency at the neck of the womb in parous women with lacerations would show trauma to be an exciting cause for its existence there, encouraged through the degenerations that take place; as a preventive measure, repair of the injuries would in many cases arrest it. In an article read before the New York Obstetrical Society, Levin, connected with Columbia University, in the Department of Pathology of the College of Physicians and Surgeons, states, "According to statistics gathered, lacerations of the cervix are not an etiological factor in inducing cancer; that it occurs with the same ratio of frequency in the cervix of the virgin as in the parous woman." This has been contrary to the teachings of gynecologists, and in my own observations I have seen but one case in a virgin; this was polypoid in its inception and apparently innocent to the eye. The pathologists pronounced it carcinoma.

If the opinion of the profession is erroneous and founded on assumption, let us have facts. The observations of Levin cannot be ignored; his conclusions are based on scientific findings and merit the careful consideration of the Fellows of this association. It would be well if the experience and findings of this body during the next year were tabulated and presented at our next annual meeting, according to the suggestion he makes. He further states, "Our present knowledge indicates only that by prophylaxis in cancer of the uterus is

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meant the observation of hygienic measures during the time of puberty, menstruation, and the sexual life of the woman generally, all of which apparently is more important than repair of lacerations," but his next paragraph acknowledges he has no proof for the statement.

With these facts based upon scientific record and with a knowledge of its increased frequency founded upon scientific conclusions of all investigators, that cancer is local in its inception and that it may be permanently removed by early operation it is important we should urge an earlier recognition of its presence by demanding a crusade of education to women and doctors; to hark, listen, look for danger; to appreciate the first symptom and prove its presence through the means at our command.

Medical journals are teeming with reports of investigations made in our research laboratories to ascertain the cause of cancer, to a greater extent probably than of any other disease. These laboratories, lighthouses of investigation, have shed their light upon so many hidden mysteries and simplified the apparently impossible that we hope we are at the dawn of enlightenment as to the etiology, prevention, or cure of this King of Pathology. All investigators being unanimous that it is local in the beginning and that it can be cured by surgery alone at present, let us not be indifferent to our duty in recognizing it early, that we may lessen its mortality until it is at least as small, or less than the mortality of cancer in any other region. Let us not, by our inactivity, increase the shadow that hangs over humanity through this great scourge.

I would call the attention of the association to inflammatory affections of the pelvis, the most common of all diseases, and which cause the greatest amount of physical suffering. These affections originate from causes long recognized, and give rise to pathological lesions, which not only exclude the sufferer from a useful life, but lead to semi-invalidism, invalidism, and frequently death. They become a prime factor in race suicide, by arresting the normal functions of the procreative organs and destroying the purpose of woman's creation. In their etiology, they are due to microorganisms which are no respecters of persons, visiting the babe as it makes its advent through the birth canal, or the aged and infirm.

In nearly all affections having a known etiology, lines of treatment have been instituted to arrest their development, and

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to stamp out their existence. As gynecologists, we have been slow to impress upon the public, and enlighten women especially, of the great dangers that threaten them through ignorance of these diseases that are liable to be brought to them through unsuspected avenues. The subject has been so enshrouded in mystery that boys and girls have grown to mature manhood and womanhood, ignorant of the laws that should govern their sexual lives, for fear that the knowledge of these diseases might lead to contamination. The home circle is the altar from which instruction must come, and the truth to the growing child from this source will stand against all other avenues of enlightenment. This knowledge, confirmed and strengthened by proper teaching in the public school, will do much toward lessening the great amount of suffering through the many sources by which gonorrhea and syphilis may be carried. It is not the purpose of this paper to treat of the social evil, but as a factor in the diseases we are compelled to treat, we should all be enlisted as soldiers in the crusade to eliminate its influence and spread.

We have been able to do but little in the arrest of gonorrhea. While nearly all treatments have been founded upon the etiology, treatment of the ravages of this disease has been founded upon the pathology and has been a removal of diseased parts—a treatment of end results rather than prevention. The glamor of surgery which came with the knowledge of these affections, may have caught us on its current, and not only carried us into shallow places, but stranded us upon sands. Regardless of the wonderful advancement wrought through the development of modern surgery, may we not have wandered in our reasoning and failed in our judgment to give the best, wisest, and may I not say, most honest consideration and treatment to this class of diseases. At all times it should be our ambition to protect woman's body, and preserve it as the typified image of the Creator, the most beautiful and crowning effort of creation.

If we were to make our application from the pursuit of agriculture, horticulture, or the care of domestic animals, would we be content to let these ravages continue? A horticulturist, observing that his choicest shrubbery and plants were showing decay, the leaves turning, or the ends of the branches dying, after thorough investigation, discovers the evil at the roots in the form of worms that were preventing the life fluid from reaching the remote parts of the plant. He does not endeavor to restore a

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state of health to the plant by cutting off the dead and dying parts, but kills the worms, the underlying cause of its destruction. In the surgery of the inflammatory diseases of women, the greater part have the same etiology. Still we are pruning and trimming, rather than arresting the known etiology. If death does not follow, a life has been prevented from fulfilling its purpose, the propagation of the race.

If we are unable to check the cause, the germs of infection can at least be given a much lessened influence through prophylaxis; by teaching to the uncontaminated girl or young woman, at a time when her mind is free from sexual thoughts, the dangers that threaten her, and to the young man as well, the possibilities of such infection. By such teaching some may be hurt, but the knowledge of right is more powerful than ignorance; the light will dispel the darkness. To the growing child the true is as easily accepted as the false, and coming from the home will live longer than from any other source.

Conditions that in their treatment simulate the inflammatory are those of arrested development. The young girl, who is forced to use all her nervous energy in the development of her mind, in grammar, high school, or college, at a period when the special organs of generation are developing, fails to menstruate, or if this function has been established the expenditure of energy arrests it, and the organs even atrophy. At the close of the mental application, nature attempts to reassert herself, but fails, and the surgeon prunes away the embarrassed organs. Temporary relief follows to the perturbed mental attitude; the surgeon rejoices that he has been made an instrument for the relief of suffering womankind, and there is no compunction of conscience that a law of health has been violated, and a promising life doomed to disappointment. Gynecology in its inception should begin as with the tender plant. Proper environment should be placed about the growing child, to aid in development and to protect when danger threatens, thereby promoting a stronger, healthier body.

EUGENICS.

It is not only the duty of the physician to carefully look after the surroundings and direct the course of the growing child, but as well to look to the betterment through eugenic laws, demanding of the parent a healthy body. "According as a man soweth,

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so shall he (his offspring) reap." The laws that are so thoroughly recognized and practised in the vegetable and animal kingdom, are still more applicable in the human, and deserve recognition from the obstetrician and gynecologist. The laws being introduced into some states to regulate marriage and eliminate disease for the betterment of the race should become universal, and the movement that had its inception in England to meet these conditions, is worthy of our consideration. That we do not raise figs on thornapple trees is a law that we have been slow to recognize. The horseman has learned that it is possible to breed for speed, might, and endurance, and this law is proven in all departments of domestic life.

To eliminate the diseases that materially effect the department of obstetrics, and especially syphilis, will not only contribute much toward lessening the mortality of infants *in utero* and early life, but result greatly in the betterment of the race. As this is a communicable disease, every effort should be made to prevent its entrance into the system of the uncontaminated by enacting laws similar to those in Indiana, making it a crime to marry where one has this disease, punishable by a fine of $200 and possible confinement in prison. Every means of prophylaxis should be practised to eliminate this affection which is visited on the second and third generation. In the rapid progress of medical science, while we have rejoiced over the arrest of so many maladies, may our voices be raised and our hearts gladdened by the hope that Ehrlich's discovery may lead to the lessening or eradication of syphilis, of all inherited diseases the most far-reaching in its consequences.

While at the inception of gynecological practice, the real pathology could not be understood; this is now history, for enlightenment came through the knowledge of microorganisms, and with the advanced means of diagnosis the specialty advanced rapidly. The sufferers of the pre-antiseptic and pre-aseptic periods were deserving of great sympathy, as then the mortality attending operative methods was high. Those that are in need of surgical skill at present are living in an age of perfected surgical science, with but few deaths attending operations. This has become so thoroughly recognized by the laity that they have become common prey for the charlatan and unprincipled surgeon. I think the fellows of this association will bear me out if I should say, that a considerable percentage of the abdominal and pelvic operations performed to-day are unnecessary and unwarranted.

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If this number was due to lack of knowledge in diagnosis, it would not be so difficult to reconcile, but to feel that a gullible community is being made the prey of fakirs, or that the people have no means of differentiating ability from chicanery, is a matter for regret and reflection. Have we as a body any duty to perform to regulate these abuses? Or are they to go on, and unprincipled and inexperienced surgeons be allowed to rob woman of her organs, maiming her health and arresting the purpose of her creation? This practice applies not only to women, but to a large percentage of the abdominal operations on men as well.

That there will always be in the profession those whose motives are only for gain and whom it would be difficult to divert from unprincipled practices, we must concede. Is there not some method by which the medical profession can regulate the practice of the incompetent? It is a fact that the fellows of this association were pathfinders, and had to blaze their way through the wilderness of existing conditions; but now, when the whole country can boast of its experienced and able surgeons, there is no reason why the beginner should not serve at the side of a master until he has become familiar with the details of the underlying principles. It might be well to confer a degree upon those who aspire to do surgery, after they have complied with a law demanding a proscribed amount of experience and time. That too much and too thorough teaching of surgery is demanded by the college curriculum is erroneous. Too much knowledge of methods is impossible; the lack of judgment in applying it is a more serious consideration.

I regret to chronicle the death of Dr. William H. Taylor of Cincinnati, which occurred at his home, February 6, 1910. The founders of this association will remember him with much pleasure as one of the fifteen who met in Buffalo, April 19, 1888, to form the nucleus of this association. Twenty-nine responded to the call, and were enthusiastic for the organization. From those assembled, Dr. Taylor was elected president. He filled the position so acceptably that by the unanimous vote of the fellows, he was elected for the succeeding year. Through his administration, the association became so thoroughly founded that the work of his successors has not been arduous. To pay tribute to his life and attainments I leave to the pen of one who knew him intimately.

For the splendid program we have to consider I thank the

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fellows for their cooperation, and the ready response to the call for papers. Much credit is due our secretary for the indefatigable labor bestowed upon, and the interest manifested in the work of this association. To him is largely due our success. No detail is too small to escape his notice; no duty too arduous for him to perform.

I appreciate the great honor of my position as presiding officer of this distinguished body of surgeons, gathered in our modern Syracuse, from all parts of our country. I have realized the difficulty of presenting anything new for your consideration, but if the fragments which have appealed to me from time to time, and which I have recorded here, will even in a small degree contribute to the success and advancement of this association, I shall be gratified. I desire to thank you for your considerate attention.

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PRESENT STATUS OF THE COLON TUBE.

BY
H. WELLINGTON YATES, M. D.,
Detroit, Mich.

(With nine illustrations.)

WHEN I was asked to present a paper for this meeting I was embarrassed in the selection of a suitable subject. Reviewing the field, however, it appeared to me that a few moments spent in consideration of the so-called colon tube would not be out of place. Unquestionably a great difference of opinion obtains as to what one can and cannot do with the colon tube. The early interpretation of its utility depended upon the tube's passing through both rectum and sigmoid into the colon and thence upward. Until recent times, the greater majority of Englishmen, Frenchman, and Americans have concurred in this belief. Nothnagel(1) (1898), Naunyn(2) (1896), and Boas(3) (1903) disputed this contention, these gentlemen denying that the tube ever passed the sigmoid. Other Germans, however, were as firm in their convictions that the tube could be passed high. Kuhn(4) (1896) claimed to be able to pass a metallic spiral spring into the colon by combined manipulation of the sigmoid. Later, by the aid of the radiograph, Schule(5) (1904) proved that this spiral spring never went higher than the sigmoid.

In 1903, v. Aldor(6), who perhaps is strongest in his assertion that the tube passes the sigmoid and therefore recommends the use of a 32-inch tube in the treatment of chronic colitis, on meeting much objection to his views, reaffirmed the same belief in 1905, submitting skiagraphs to prove his contentions. Faulty technic, however, in the making of the pictures did not fully demonstrate his claim. In his second paper, in 1905, he is positive that fluid introduced into the rectum alone and without the use of the long tube never in normal individuals goes higher. The absolute inaccuracy of this last statement would rather lend prejudice to the acceptance of his entire claim.

Other experiments have been carried on by Soper(7) (1909), Lilienthal(8) (1906), Rosenberg(9) (1905), and Haines(10). The later ones all give the same deductions—namely, that given a

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normal individual, seldom, if ever, does the colon tube pass up to the descending colon. Deaver (1903) states that the flexible tube can be passed into the colon and, as a proof of this, says that when the tube is being passed, if water is permitted to run through it simultaneously, this is a key as to the certainty that the tube enters the colon. Indeed, I believe there is even now a large majority who hold to this last statement. The two later papers by Soper and Haines, dealing with the subject quite comprehensively and by the aid of numerous skiagraphs, rob me of originality in relation to this subject, but inspire a desire to

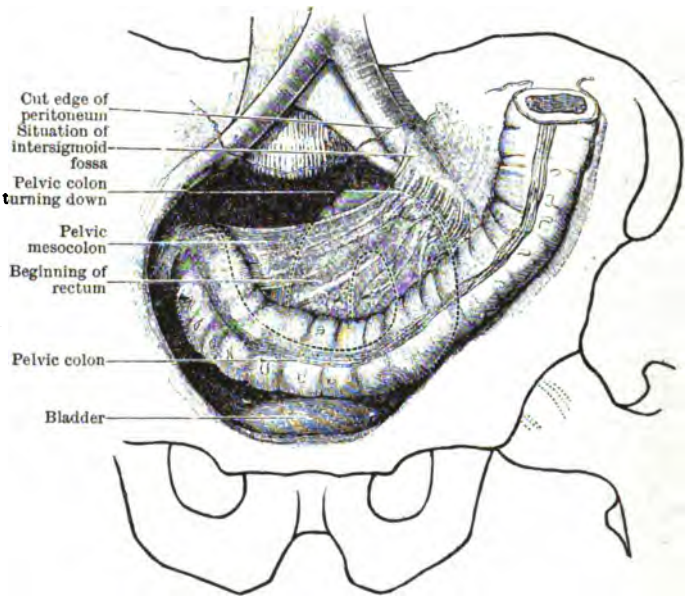

FIG. 1.—Anatomy of sigmoid (after Cunningham).

substantiate their findings and, if possible, to determine what we can expect from a continued use of the high tube.

By conjecture it will be perceived that I was a firm believer in the tube, since I determined for myself to carry on such work as would be necessary to fully substantiate my views as to its real or apparent good. The conclusions to these efforts could not have been possible but for the painstaking efforts of Dr. George C. Chene, who made all the skiagraphs and otherwise cooperated with me. I am also indebted to others of my medical friends who believed, as I did, that they could pass a colon tube into the

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colon, and who, upon invitation, have attempted thus to do and ailed.

Notes on my skiagraphs will show that, having failed to pass the ordinary tube, I used other types of flexible instruments, such as the Wales bougie, large heavy-bodied soft-rubber catheters, metallic spiral coil, the flexible stilet of a horse catheter,

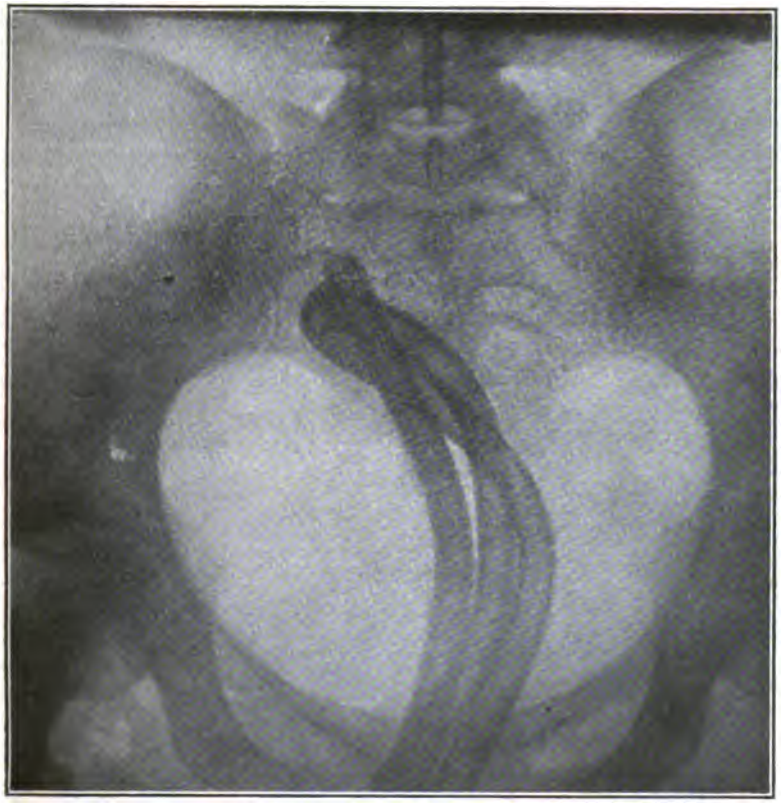

FIG. 2.—Patient No. 1. Stiff rubber tube introduced in Sims' and dorsal positions. Skiagraph ventrodorsal.

different sizes, weights, and lumens of both rectal and stomach tubes, all with the same result. Much has been said regarding the position of the patient during this maneuver. I assume that persons upon whom we endeavor to pass a tube are ill, and therefore I have only asked the patients to place themselves in such positions as would be possible to assume while ill.

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Among these are the dorsal, knee-chest. ventral, Sims's, and some modifications of these several postures.

As will be seen by the skiagraphs, we did not succeed in a single instance in passing the tube above the sigmoid, and in only two

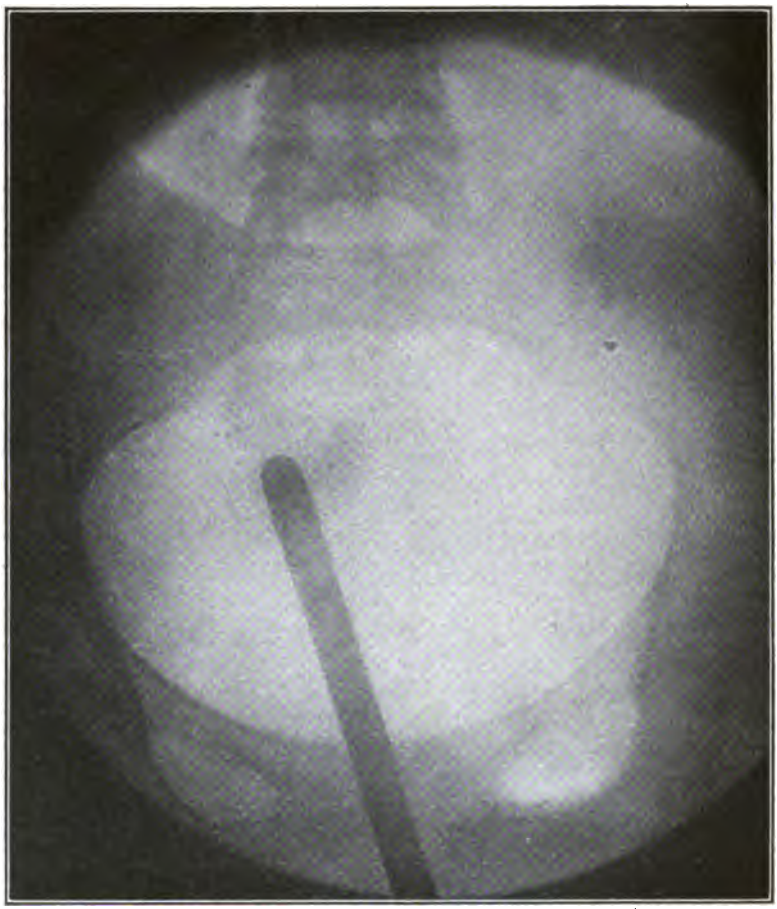

FIG. 3.—Patient No. 3. Skiagraph of stilet of horse catheter (coiled wire spring). Introduced with patient in dorsal position. Ventrodorsal.

of the skiagraphed results does the tube go beyond the ampulla of the rectum. Haines in his paper says that in one case he was able to pass the tube not only into the descending colon, but passed it through the splenic and hepatic flexures as well; this, however, being done by aid of a sigmoidoscope with the subject

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placed in an inverted position, which has no real bearing in therapy since it is not practical.

When we consider the anatomy of the colon, sigmoid, and rectum, it is not to be wondered that these maneuvers have failed in their accomplishment. The rectum is well fixed at the lower portion; it immediately curves backward and the mid-portion follows the curve of the sacrum, then ascends obliquely to the left sacroiliac symphysis, to be continued as the sigmoid, having a

FIG. 4.—Patient No. 4. Stiff rubber rectal tube passed while patient was lying on right side and belly with legs partially drawn up.

more or less sphincter at this point, sometimes called the third sphincter. Thus we see that the rectum is not by any means a straight path, and the smaller caliber of the upper portion may and does act as an obstruction to the passage of foreign bodies coming from below.

Considering the anatomy of the sigmoid (Fig. 1), we find it first runs across the upper surface of the bladder to the right pelvic wall, then recrosses the pelvis in a line posterior to its first crossing; finally it returns toward the middle line, and passes into

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the rectum. The upper portion of the rectum is mobile and the mesosigmoid unusually long and permitting freedom of movement. Undoubtedly, this last factor explains why many have been confident that stiff instruments have passed into the colon when in reality the viscus was pushed upward and the instrument did not follow the lumen at all. Therefore, when one considers the tortuous route of the lower bowel, its many angulations and places of obstruction, can we wonder that sel-

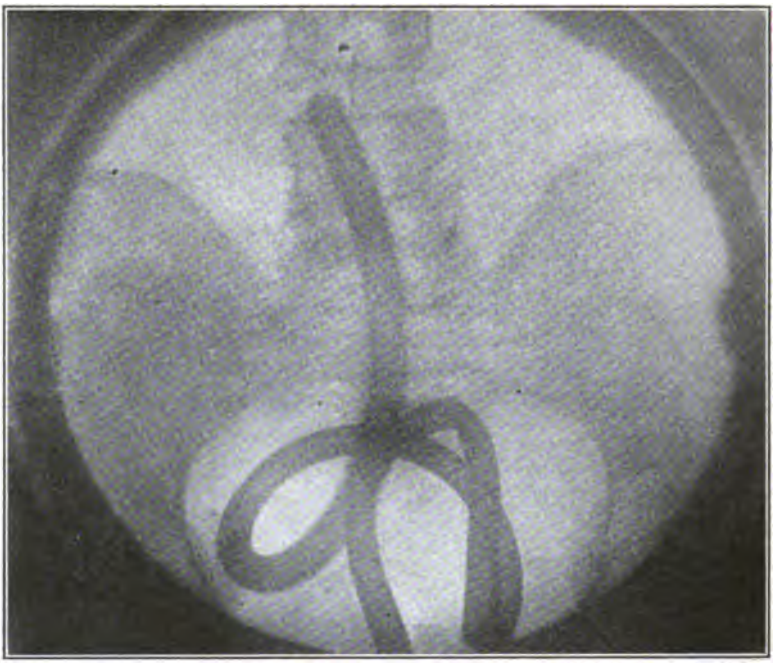

FIG. 5.—Patient No. 4. Lying on right side and belly with legs drawn up. Stiff rubber tube. Fourteen ounces of water in rectum.

dom, if ever, does the colon tube find its way to the colon, and when it does it is probably associated with Hirschsprung's disease or congenital dilatation and hypertrophy of the colon.

The sole purpose in attempting to pass the ordinary rectal tube into the colon has been to carry fluid directly to that viscus for the purposes of food absorption or ablution. I think we can substantiate by our skiagraphs that these premises are wrong, that it is unnecessary, unwise, and mischievous. Having concluded upon the uselessness of the colon tube, as such, we

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became interested in how such good results could be obtained by Murphy's drop method of administering normal saline solutions, when he advises the tip of the instrument to be ad-

FIG. 6.—Patient No. 6. One quart bismuth mixture injected in Sims' position. L. Tube inserted 5 inches. Skiagraphed dorsoventral after twenty minutes.

mitted but a short distance, since many observers had thought that this absorption took place alone in the rectum and sigmoid. Now, while it is believed that these latter have a considerable power to absorb large quantities of water, it did not seem

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rational that they alone could take up so much. The manner of absorption of foods into the body is not certainly known; many of the physical laws are necessary for this perfectly working

FIG. 7.—Patient 8. A. One quart of bismuth mixture injected by ordinary rectal tube inserted 5 inches with patient in Fowler's position. Skiagraph in Fowler's position after ten minutes.

system, and yet physics alone will not satisfy for an explanation of this phenomenon(13).

Statements from those who are accepted as good authority are not in accord. We have those who maintain that water

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injected into the rectum will never be carried higher. Others say we have no such thing in the normal gut as reversed peristalsis and, indeed, that absorption in the colon beyond the splenic

FIG. 8.—Patient 8. B. Bismuth mixture, 1 quart, injected into rectum while in Fowler's position. Position changed to horizontal after twelve minutes. Dorsoventral skiagraph.

fixture is but little. In view of the fact that under favorable circumstances the colon can absorb such enormous quantities of water, it does not seem tenable but that the entire colon is a very actively secreting surface and that the mucous membrane

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of the larger bowel absorbs fluid with great rapidity when that portion of the gut is in its normal condition of moderate distention; overdistention of course would defeat this end. Antiperis-

FIG. 9.—Patient 8. C. Bismuth mixture, 1 quart, injected into rectum while in Fowler's position and then changed to horizontal. Skiagraph thirty-five minutes after injection.

talsis was first discovered by C. Jacobi(14) in 1890, and later confirmed by W. B. Cannon(15), T. R. Elliot, and E. Barclay Smith. Is it not reasonable, therefore, to assume that the great absorptive ability on the part of the colon during proctoclysis

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is made possible by this antiperistaltic wave, which is caused by the stimulation of a rectum distended by water and which has for its purpose the ability to carry part of this water upward and also to check the onward trend of the regular peristaltic wave from above, thereby keeping the water in contact with the mucous surface long enough to promote absorption? It does not seem reasonable that water injected into the rectum finds its way into the colon alone through pressure, as is maintained by Hertz(17).

I submit the following skiagraphs, first of all, to show that fluids injected into the rectum are carried to the cecum. Second, that no device is necessary for this end except a small male catheter. Third, that within ten minutes this fluid can be skiagraphed in the cecum. Some of these pictures are taken with patients in the dorsal position, some in ventral, and some in Fowler's. Bismuth carbonate 4 oz., mucilage acacia 8 oz., water q. s. to 1 qt., constituted the mixture used when specified on skiagraphs as bismuth mixture. The mixture was always injected by a small rectal tube or a large male catheter inserted 5 inches. If done slowly, no trouble was had in injecting 1 quart even in our smallest subjects.

OBSERVATIONS AND CONCLUSIONS.

1. Seldom, if ever, are soft-rubber tubes admitted into the normal colon.

2. When an endeavor is made to force the tube upward, even by the gentlest manipulations, it is found to coil itself up in the rectum and there do positive harm because of pressure, irritation, and the consequent inability to retain the enema.

3. In perhaps half the instances it is impossible to tell when the tube is coiling upon itself, even when we suspect it.

4. Colon tubes as such are of no value because they do not reach the colon, and they are mischievous in that proportion as we endeavor to force them higher up.

5. Water or fluid injected 4 or 5 inches into the rectum is carried upward into the colon and may be found at the cecum in ten minutes.

6. There is good reason to believe that a reversed peristalsis is set up when fluids are injected into the rectum.

7. The introduction of a tube more than 5 inches for colonic irrigation or therapeutic enemata is useless and likely to defeat the object desired.

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DISCUSSION.

DR. LEWIS S. MCMURTRY, Louisville.—The paper just presented by Dr. Yates is a very practical one, and it presents for consideration some very important and interesting points in the after-treatment of abdominal operations. The therapeutics by means of enemata and rectal irrigation assumes at times a very important aspect. I presume the experience of every one here is like my own, that we were satisfied several years ago in what was called high enemata for the purpose of moving the bowels after the inhibition of the alimentary tract during a surgical operation which involved the opening of the peritoneum. It has been discovered that what we called high enemata were not high enemata; that if we introduced a rectal tube into the bowel and kept on passing it and passing it, this tube would reach up to the sigmoid, and then it would begin to coil on itself, but it did not pass into the bowel as it appeared to. I have abandoned all efforts at what is called high enemata, recognizing that it was a deception. The sigmoid flexure in the pelvic basin plays the same rôle as is played by the omentum in the abdomen. It passes across, and in inflammatory conditions you always find the sigmoid flexure adherent just as you find the omentum higher up. There is an anatomical fact which has a great deal to do with this fact, and that is, the descending colon passes down closely, its mesentery is very short, the sigmoid has a very long mesentery, and the rectum is bound down closely, so that the sigmoid anatomically has a large range of movement. Now, we all know with the use of the sigmoidoscope, as well as the colon tube for irrigation, we have felt the tube in the

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upper abdomen, and we have thought it was in the colon. When it goes into the sigmoid, if pressure is made, the sigmoid spreads out like opening a fan, and the tube is carried around the abdomen by means of this long mesentery which the sigmoid has and never reaches the colon at all. This deception has been emphasized by the paper presented today.

I have been very much interested in this subject in consequence of some investigations which were made along the line of Dr. Yates' observations, by my colleague, Dr. Hanes, of Louisville, who, with skiagraphs has demonstrated the fact that the tube does not pass up into the colon; that in the ordinary horizontal position fluids do not pass up there under any circumstances, and that these instruments which we thought were up in the colon were moving about in the sigmoid flexure and over the abdominal cavity. We now have reached the point where we can demonstrate, as shown by Dr. Yates and Dr. Hanes, these facts, so that we are enabled to correct the errors hitherto made. Of a number of important considerations which were alluded to by Dr. Yates in his paper one of the most important is the irrigation of the colon. This has an important bearing upon the treatment of diseases of the colon, especially ulcerative conditions. If, for instance, by an appendicostomy or by a cecostomy you open the cecum itself, through the opening established there, you can irrigate the colon from below or above; but if you have no opening in the caput coli, you will find that it is almost impossible with the patient in any position that you choose, even inverted in Hanes' position, you will find it impossible to get water up into the ascending and transverse colon. But if you have an opening in the cecum and you throw water in, the gas will be forced out of the opening in the cecum, and the entire colon will be filled with the injected fluid.

DR. J. GARLAND SHERRILL, Louisville.—It has been my pleasure to see some of the work of Dr. Hanes along this line. The work is very difficult, and I wish to congratulate Dr. Yates on the amount of work he has done. I know he has spent much time in studying this subject. Dr. Hanes began in the fall of 1908 to make his experiments, and concluded after a number of experiments had been made with soft tubes and with bismuth, that the tube would not ordinarily pass beyond the sigmoid. He used a proctoscope in one instance, both for bismuth and for the tube, with the patient in the inverted position, and concluded he had passed the tube around to the cecum and so reported. Later he discovered by experiments that he did not pass the tube beyond the sigmoid. This was proven by the position assumed by the tube when inserted into the cecum and pushed around in the cadaver to the sigmoid. According to the paper of Dr. Yates, we see that bismuth has been injected from the rectum around to the sigmoid. It seems that in the sigmoid we have a great variety in length. The fixed point on the left side holds the descending colon, and then the sigmoid

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may assume almost any length, depending upon a given case. Dr. Hanes found on the cadaver in one instance that the sigmoid was 30 inches in length, and in others as short as 10 inches. He put in a straight tube, carried it right above the navel, as Dr. McMurtry has indicated, you can feel the tube above the pelvis, and you think you have passed it into the colon when you have not. Dr. Hanes has demonstrated that fluids pass with difficulty into the colon and cecum because of the amount of gas that is found in this portion of the bowel, and he also claims, as Dr. McMurtry has pointed out, that if you have an opening in the cecum or in the appendix the gas will come out and the fluid will go in. He uses coal oil in the treatment of amebic dysentery.

This is a very important subject, and I am glad to see the work that is being done by men of our society. I am glad we are seeing original work done, demonstrating to us some facts which have been hitherto under discussion.

DR. LOUIS FRANK, Louisville.—I rise to say a few words in connection with Dr. Yates' paper. The other gentlemen have spoken of the excellent work of Dr. Hanes, and in Louisville we have been familiar with this class of work, and on account of the original work Dr. Hanes has done along this line we have ceased for a number of years in attempting to introduce a tube into the bowel. It has been shown conclusively that it is im possible, as the other speakers have said. There is one point I wish to speak of, and that is the therapeutic value of injections into the bowels. The essayist seems to think or believes that these injections are of little value, and dismissed this phase of the subject with a word or two. I am perfectly familiar with some of the work of our Louisville colleague in this direction, and I wish to say there is a distinct value in the injection of fluids and in the use of the bowel for medication in bowel lesions, that is, lesions high up in the big gut, by the use of the inverted posture which the essayist has spoken of. Thus in the cases to which this treatment is adapted the inversion of the patient does not prevent its being used, and there is no reason why the method cannot be used. It gives absolutely no pain nor discomfort to the patient. I have had Dr. Hanes treat several cases for me and have seen this treatment applied. It is done easily by suspension of the patient over the edge of the bed or over a chair in the head-away-down posture. In young girls and women this treatment does not subject them to any inconvenience or discomfort. The last individual treated was a very nervous young girl, and the treatment was carried on without any difficulty. The proctoscope is introduced into the lower bowel and the fluid poured in. It is astonishing in this way to see what amount the bowel will retain, and its capacity for the retention of fluid. The fluid can be seen to disappear around the flexure of the sigmoid, and in this way it reaches the higher surfaces of the large bowel. In cases of amebic dysentery, in

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cases of ulceration high up, in certain catarrhal conditions which exist here, and which can be beautifully demonstrated in this manner, this method of introduction of fluids or of medicaments, or of drug treatment of bowel ulcers, even with a short tube in the lower section of the bowel, is of distinct advantage. As a therapeutic measure, it is an advance and a manner of treatment which cannot be attained in any other way.

DR. FRANCIS REDER, St. Louis.—I have been exceedingly pleased with the instructive and admirable paper presented by Dr. Yates. Dr. Soper has done considerable experimental work in the field of rectal inflation, and the injection of water into the lower bowel, endeavoring to try to get it as high up as possible. I am doing considerable work in a hospital where a great many physicians have patients. Frequently I have heard some of these physicians say to the nurse: give the patient a high enema or a colonic flushing. Often have I wondered if these physicians had gotten the results they expected to get from these so-called high enemata. The excellent skiagraphs that have been exhibited by Dr. Yates are really very conclusive. They show from an anatomical and physiological standpoint the great difficulty encountered by a fluid to find its way to any considerable height into the bowel. Furthermore, we should not lose sight of the danger which may attend the introduction of certain tubes in use for high enemata. If we take an ordinary colon tube and introduce it into the bowel it is almost impossible to get it beyond that portion of the bowel close to the sacral prominence.

So far as high flushings are concerned, I have convinced myself by the introduction of the hand into the lower bowel, that the ordinary tube coils upon itself and fluids do not reach beyond the so-called shelf of the rectum. The introduction of instruments high into the lower bowel requires intelligent manipulation and skill, and is not entirely free from danger.

DR. JOSEPH PRICE, Philadelphia.—This is an old and interesting subject. Senn's experiments with hydrogen gas put about all the boys in America with habits of industry to work repeating his experiments in gunshot and stab wounds of the abdomen. With the use of hydrogen gas he was simply able to determine the presence or absence of lesions of the bowel. I repeated these experiments after Senn had presented the results of his work to the American Medical Association, at which time nothing but complimentary remarks were made of the wonderful work that Dr. Senn had done for his patients, and the wonderful influence it had over the young men throughout the country who were interested in abdominal surgery. I took quite an active interest in that discussion, and when I repeated Dr. Senn's experiments before the Pennsylvania State Medical Society they threatened to shave my head and lock me up if I shot dogs on the platform. But I kept on doing so. Some men in those days took uncomfortable risks in their experiments in the study of the subject under consideration. For instance, I passed

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hydrogen gas through myself and lighted it at my mouth. (Laughter.) I volunteered to do it in the presence of the Pennsylvania State Medical Society, and commanded them to keep quiet and calm while I was conducting these experiments on dogs. I told the members at the time that I was a man who had a conscience and that my motives were as good as any members who were present. I passed gas through the rectum and lighted it at the mouth before shooting the dogs, after shooting them I lighted the gas at the shot wounds and demonstrated the presence of the lesions, and they let me go without any further trouble.

The subject has been very beautifully covered in this excellent paper of Dr. Yates. A classmate of mine, Dr. Huyde Cooper, wrote an essay on large bowel alimentation, for which he received $100, as a prize by the University of Pennsylvania in 1877. It would be well worth the time for any of you to look up that paper and read it. The subject was very thoroughly discussed by him at that time, and very extensive experiments were made as far back as 1877. The experiments so beautifully alluded to by Dr. McMurtry were carefully made by some good army and navy surgeons in their efforts to relieve the amebic dysenteries, and they came to precisely the same conclusions that Dr. McMurtry has in his observations and discussions, and all these men recognize the fact that it was necessary to follow up scientific medication of the large bowel at some other point than that of the anus. Many blunders were committed all over the country on account of ignorance or failure on the part of surgeons to observe the extent to which the sigmoid is loaded, and the large elbow condition that is commonly found.

We find these conditions alluded to by Dr. McMurtry every day when we open the abdomen, and carelessness on our part would result in needless accidents and needless surgery, and I question very much whether the surgeons of experience and judgment here have not had accidents of that character, or have been guilty of needless surgery.

Again, I want to allude to Huyde Cooper's work and to say that we will find in the army and navy hospitals a number of orderlies who have had their appendices removed and permanent fistulæ established for medication who have improved rapidly, and their trouble has vanished, and they have refused to have the fistulæ closed because they recognized the benefit of medication from that end.

As to the fixed position of the descending colon, if you will recall the ease and facility with which you can strike the colon in your colotomies, scarcely going a hair's breath amiss in your incision, and it is rarely necessary to make a search for it, but beyond it you find a huge plumber's trap in the sigmoid.

DR. YATES (closing the discussion).—I agree with what Dr. McMurtry has said with reference to the question of passing a colon tube. That has been recognized for some time, but in

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dealing with the question of colonic lavage, I deemed it pertinent to bring this matter up and to bring out the other point that water does pass up the colon in the horizontal position. The whole purpose of my paper is not so much to show conclusively that the colon tube cannot be passed beyond a certain point as it was to show the possibility of medicating not only the rectum and sigmoid, but the colon itself with fluids, and, unless my skiagraphs are entirely wrong, I am able to show you by one or two distinct ones that that can be done. In looking at this skiagraph, I think you can see from every direction that the fluid passes through the entire large bowel. This patient had a bismuth mixture, one quart, injected into the rectum while in the Fowler position, and then changed to horizontal. The skiagraph is a thirty-minute exposure. I have one here with a ten-minute exposure. Here is one that was taken in twelve minutes which is nearly as good. Unless my skiagraphs are radically at fault or my interpretation is entirely wrong, the fluid has been carried around that course within the time specified above. I did not mean to imply, as Dr. Frank thought I did, that this was not a good means of medication. Indeed, my skiagraphs would bear this out. The paper was not read for the purpose of discussion on the colon tube as much as the desire to demonstrate the possibility of ablution and medication of the entire colon by means of a small male catheter inserted but 5 inches.

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THE DIAGNOSIS OF THE CHRONIC SURGICAL LESIONS IN THE UPPER ABDOMEN.

BY
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THE differential diagnosis of chronic surgical lesions in the upper abdomen can be made with accuracy, in the great majority of instances, by the anamnesis alone. This differentiation can be strengthened frequently by the physical findings and later receive such confirmation as may be obtained from laboratory examinations. Do not construe this language as detracting from the value of laboratory findings in any way or to any degree, but, rather, as placing them in their proper subordinate relation to the anamnesis. Diagnosis is the greatest thing in surgery after all, and the mastery of it is one of the qualifications which distinguish the true surgeon from the mere operator. Of all the methods in diagnosis, the anamnestic—the taking of the medical life history of the patient—is at once the most important and the most neglected.

Cholelithiasis and Ulcer.—Cholelithiasis and ulcer, especially duodenal ulcer, in their early stages particularly, present many of the same symptoms. As these symptoms are diagnostic in their nature, differentiation depends upon a correct interpretation of them as regards their character, location, severity, time of occurrence as related to the ingestion of food, and the periodicity of their recurrence. So slight is their variation in these respects in some instances that the diagnosis of cholelithiasis as opposed to ulcer is extremely difficult, while the differentiation of gastric from duodenal ulcer, infrequently impossible, is not attended, ordinarily, by such difficulties. Nevertheless, differentiation of cholelithiasis from ulcer can be accomplished, and with greater frequency and certainty, whenever due regard is given to the interpretation of the comparatively mild symptoms announcing the initial stage of both gallstone disease and ulcer. Much of the difficulty in diagnosis is attributable to either a lack of knowledge concerning the early or inaugural symptoms of

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both conditions or a failure in the appreciation of the diagnostic value of them.

That the symptomatology of gallstone disease, as generally understood and as taught in our text-books, is but the symptomatology of its terminal events or complications rather than of its initial phenomena is largely responsible for the many failures in the diagnosis of this common condition. Until there comes a general recognition and a due appreciation of the early symptoms of cholelithiasis and until colic, jaundice, bile-stained urine, and putty-colored stools universally are recognized as indicative only of its late complications will we continue to witness sudden and unexpected deaths from its many terminal events.

That considerable misunderstanding exists also as to what phenomena constitute the early symptoms of uncomplicated gastric and duodenal ulcer and that they have been confused with the more late and more striking symptoms of complicated ulcer is apparent to all who are conversant with the literature of the subject. This confusion seemingly is due to the fact that some observers, meeting with ulcer which has existed within the stomach or duodenum in various stages of activity for a period of from five to twenty years, enumerate the striking and persistently continuous symptoms present after the lapse of those years as the symptoms of ulcer. They either ignore or fail to realize the fact that the symptoms present at that late period almost invariably are those of the complications of ulcer—the contractures of the stomach wall, the obstruction at the pylorus and its sequentially occurring conditions, the adhesion of the stomach or duodenum to contiguous structures, even in not a few instances the ingrafting of malignancy—rather than those correctly attributable to ulcer and to ulcer alone.

As in cholelithiasis there is an early period with its attendant initial symptoms so decisive that a diagnosis safely can be based thereon and a late complicated period with its well-known terminal symptoms, so in gastric and duodenal ulcer there is an early uncomplicated stage during which the pure symptoms of ulcer prevail, and a later complicated stage announced by symptoms more striking and more continuous than those of the early period, but which are the symptoms of the complications and not of the ulcer.

Since the diagnosis of cholelithiasis and of ulcer must rest largely upon the anamnesis, it is necessary that the latter be complete, exhaustive, and minute as regards every detail, and

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that all points therein be interpreted judicially and accorded both their individual and collective value.

Gastric and Duodenal Ulcer.—When ulcer patients seek relief presenting the early symptoms of the disease, careful questioning will bring out the fact that these symptoms have existed periodically for at least months or, more often, years. If the patient can recall the events of the earliest history period, not infrequently he will affirm that only an immoderate meal then provoked an attack of stomach distress or pain. At a somewhat later period, the one hearty meal of the day was followed by pain, while the two lighter meals were not so attended. Still later, all three meals, if of the same consistency, equally provoked the distressing syndrome.

The fact that stomach symptoms of some nature have existed for a long period of itself should suggest the possibility of ulcer. That these symptoms have recurred in periodical attacks alternating with intervals of comfort and health emphasize not alone the possibility, but also the probability of ulcer. This periodicity is, in fact, the most striking feature in the history of ulcer. The attacks recur at irregular intervals, with the symptoms appearing suddenly and continuing without change in character, time, or duration day after day, week after week, or month after month. Every day, every week, every month is but a repetition of the previous day, the previous week, the previous month. Suddenly, and from no apparent cause, comes an interval of complete, or nearly complete, relief from all symptoms, and for weeks, months, or even years the patient is supposedly well. If treatment was instituted during the attacks, such treatment is given the credit of a cure. Eventually, however, there comes a repetition of the attacks, the symptoms recurring with the same suddenness and possessing the same characteristics save that they are more pronounced and more nearly continuous.

Thus the cycle of alternating attack and interval of relief is completed and continues year after year until, as secondary phenomena complicate the primary disease, the attacks are of longer duration and greater severity, while the intervals grow shorter. Finally, there comes a time marked by the total absence of intervals of relief, when the symptom-complex, which has been changing gradually as the intervals have shortened, is far different from that attending the early periodical attacks and marks the late or complicated stage of ulcer.

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The analysis of the symptoms manifest in these early attacks is best begun with the ingestion of food. As soon as food enters the stomach the patient experiences perfect ease, it matters not how severe may have been the stomach distress prior thereto. A small quantity of food assures ease as certainly as does a full meal, but the greater the proportion of solid food, the longer will be this period of ease. The duration of stomach ease, however, while influenced by the consistency of the food, somewhat depends on the situation of the ulcer and largely on the presence or the absence of adhesions.

In the initial stages of ulcer the stomach symptoms are so mild in nature and make so slight an impression on the patient that frequently it is difficult to secure a history of their occurrence. They are very like to the initial symptoms of cholelithiasis, but vary from them in the important particular of time of onset. In both ulcer and cholelithiasis these initial symptoms are a sense of weight, fulness, and oppression referred to the stomach. There is flatulence, and the expulsion of sour or bitter gas affords more or less relief. In ulcer, however, this sensation of weight, fulness, and oppression follows a period of ease lasting for from one to two hours in gastric ulcer and from two to five hours in duodenal ulcer. In cholelithiasis there may be practically no period of ease, the stomach distress appearing before the meal is completed or within thirty minutes after its completion. In fact, I have seen this stomach distress so great before the completion of the meal that the patient would leave the table and provoke vomiting in an effort to secure relief. Somewhat later in the history of ulcer, these initial symptoms become more pronounced, but the period of ease still remains.

Following this variable period of ease comes a stormy symptom-complex, which reaches the height of its activity in from two to five hours after the taking of food. Burning pain and distress in the stomach rapidly increase in severity, to be somewhat ameliorated but not relieved by the eructation of sour gas and by the expulsion of mouthfuls of sour vomitus. No significance can be attached to the pain as regards its location or its character, but the time of its greatest activity—from two to five hours after a meal—is most significant. It is the pain of a partially empty stomach rather than of a full one, and can be relieved by the taking of food, of drink, or of alkalies. In fact, rather than to speak of the pain as following a meal, it is more

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correct to refer to it as preceding and as being relieved by the meal. The "hunger pain," as Moynihan so aptly has named it, of duodenal ulcer is best illustrated by the attacks coming on in the night and waking the patient from sleep shortly after midnight. This pain persistently destroys comfort and prevents sleep until food is taken, when comfort is restored and sleep becomes possible.

Tenderness on pressure at a fixed point in the epigastrium generally can be elicited in the early stage of ulcer during an attack of pain, and the location of this fixed tender point often is of value in ulcer localization. When this tender point is just to the right of the median line, it is indicative of ulcer at or near the pylorus. When some distance to the right, it has value in determining the existence of duodenal ulcer. The farther the tender point is to the left of the median line, the farther from the pylorus the gastric ulcer will be found. Referred pain and tenderness occasionally are noted in the back to the left of the spine and opposite the tenth and eleventh dorsal vertebræ in gastric ulcer, while the referred pain and tenderness in duodenal ulcer radiate more to the right along the edge of the ribs, as in gall-tract disease.

Late in the history of ulcer, when the symptoms attending its complications overshadow those of the ulcer, the appetite, which previously has been good, becomes fickle and poor and, because of the intense stomach distress following every meal, many patients purposely deny themselves food. As a result of the poor appetite and of this denial, loss in weight and strength follow and, not infrequently, invalidism becomes pronounced. There is no longer either periodicity of attack or interval; for pain, or marked distress at least, occurs with every meal. Following the intake of food there is no ease as in the early days, but pain, which may show wide gradations from a more or less distressing soreness to a sharp stabbing sensation, occurs immediately. This pain always is located at the same point in the epigastrium, and generally steadily increases in severity until the stomach is emptied by irrigation, by forced vomiting, or by the escape of the stomach contents into the intestine. The relief which comes with the empty stomach is more frequently relative than absolute.

Contractures and the resulting distortions of the stomach wall, obstruction of the pylorus, subacute perforations, and adhesion of the stomach and duodenum to the surrounding structures,

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especially to the gall-bladder and the kidney pouch—all these produce symptoms modified and varied according to the nature of the complicating lesions.

Hemorrhage in gastric ulcer occasionally is an important, pronounced, and dangerous symptom. Occurring as a hematemesis, it is both more frequent and more voluminous than in duodenal ulcer. Hemorrhage in duodenal ulcer, occurring as either hematemesis or melena, ordinarily must be considered as a late result of the ulcerative process, occurring long after a diagnosis should have been established. While hemorrhage unquestionably occurs in the large proportion of the cases of duodenal ulcer, it is as an internal or concealed hemorrhage in many instances and, depending upon its severity or the frequency of its repetition, must be recognized by the general symptoms of hemorrhage or by the secondary anemia or by the presence of blood in the stools rather than by the vomiting of blood. In the differentiation of cholelithiasis from ulcer, the occurrence of hemorrhage necessarily must be considered as a confirmatory symptom of ulcer, either gastric or duodenal.

Cholelithiasis.—The initial symptoms of cholelithiasis, which invariably are referred to the stomach, may be fairly constant, recurring meal after meal and day after day, varying but slightly in character and intensity. In other instances they are noticeably present only after the ingestion of an unusually hearty meal or of some particular article of diet. In some patients the symptoms may be fairly permanent for weeks or months, to be followed, as are the painful attacks in early ulcer, by an interval of complete relief. In my own experience, in the majority of patients these symptoms have been marked by fluctuations in intensity rather than by intermissions in occurrence.

Following the ingestion of food there is no ease as in ulcer, but, either before the meal is completed or within thirty minutes after its completion, the patient is conscious of a feeling of fulness, of weight and oppression, an uneasiness, or a discomfort, invariably referred to the stomach. Occasionally distinct but transitory pain is present which, compared with the pain of early ulcer, is of much less intensity, occurs much sooner after the taking of food, in fact, is the pain of a full stomach and not of an empty one, and does not progressively increase and reach its height at from two to five hours after a meal. This pain in cholelithiasis not seldom radiates through the back in the direc-

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tion of the right shoulder, which is in sharp contrast with the direction of the referred pain in gastric ulcer.

With the onset of pain, be it ever so slight, frequently comes a feeling of cold, a chilliness, never severe, never of long duration, and more often noticed in the evening than at any other time. Shortness of breath, manifest early in the course of a meal and increasing as the meal progresses, is a constant complaint of some patients. Moynihan has called attention to a catch in the breath—a sudden stabbing pain—which occurs on deep inspiration and which is characteristic of gall-bladder diseases, often distinguishing them from gastric and duodenal conditions. Occasionally patients will complain of a more or less constant discomfort—not a pain—originating at the site of the gall-bladder and extending to the right along the edge of the liver to the axillary line. In my experience, this discomfort bears no relation to the ingestion of food as does the similarly located referred pain occasionally present in duodenal ulcer.

Flatulence is associated with the pain, and when the patient belches she experiences some relief from the weight and oppression in the stomach. Following free eructation, the gastric symptoms frequently disappear completely. Nausea may be present in some cases, and vomiting, although an infrequent event, may occur with complete relief from all stomach symptoms.

One of the most valuable signs of gallstone disease is tenderness over the gall-bladder, due to a low-grade cholecystitis, resulting from the presence of stone. Whenever this tenderness is not readily apparent, it may be elicited by insinuating the thumb well under the edge of the ribs, over the gall-bladder, and requesting the patient to take a deep inspiration. As the liver and gall-bladder are thus forced downward, the globe of the latter comes in rather close contact with the thumb, causing a sudden sharp pain and an immediate involuntary arrest of inspiration. This point of tenderness is still farther to the right of the median line than is that of duodenal ulcer.

Another sign of the existence of gallstones, infrequently met in my own experience, but of considerable value when present, is tenderness over the posterior surface of the liver, opposite and to the right of the eleventh and twelfth dorsal vertebræ. This sign sometimes is obtainable when deep thumb pressure over the gall-bladder is negative in result. This tender point is on the opposite side of the spine from the tender point in gastric ulcer.

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Gallstones may remain quietly housed in the gall-bladder for years, practically producing no symptoms, save those above enumerated as the early or initial ones. The continuation of these mild symptoms over a long period indicates the existence of latent gallstones which, unfortunately and all too frequently, are latent only in so far as the production of striking symptoms is concerned. For months or for years these symptoms may continue without marked exacerbations; in fact, the majority of patients will not give during a lifetime more marked indications than these of the presence of gallstone disease. On the other hand, the irritation of calculi in the gall-bladder, determining an infection of that viscus; the entanglement of a stone in the pelvis of the gall-bladder or in the convolutions of the cystic duct; the transit of a stone through the common duct or its impaction therein; the secondary infection, suppuration, and perforation of the gall-bladder and the ducts; the pericholecystic and pericholangic inflammations with crippling adhesions; primary malignant disease in gall-bladder and duct; acute and chronic pancreatitis, with a possible incurable diabetes, are terminal events which, most unexpectedly and most rudely, may disturb the quiet progress of these mild, unappreciated, and misinterpreted symptoms of latent gallstones.

To even enumerate the symptoms of these many terminal complications of cholelithiasis would carry us far afield beyond the necessary limitations of this paper. They are the symptoms so generally and so erroneously accepted as the only diagnostic evidences of gallstone disease, the chief of which are colic, jaundice, bile-stained urine, and putty-colored stools—symptoms which are inadequate in purpose, in so far as the prevention of complications and the conservation of health and life are concerned, in that they appear late in the disease and only after the initial and mild, but equally diagnostic symptoms have been present for months or years.

A more complete consideration of these late symptoms and complications of gallstone disease will be found in my paper, "The Terminal Events of Gallstone Disease," which I had the honor to present before the association last year.

Cancer of the Stomach.—In the great majority of instances (66 per cent., according to Moynihan, and 67 per cent., according to Mayo) cancer of the stomach is but a sequence of ulcer, the symptoms of the latter gradually merging into or being displaced by those of the former. These symptoms are those

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referred to above as denoting the existence of complicated ulcer. The period of stomach ease after food steadily shortens until there is no ease, for distress at least, if not actual pain, occurs immediately following the taking of food. Somewhat later in the disease, the pain is continuous in most instances. It generally is of moderate intensity, bearable but persistent, and is aggravated immediately by the ingestion of food. This pain, while more diffuse than the pain of ulcer, is still epigastric in its location and is not the widely diffuse pain of perforation. The appetite, which has been good during the ulcer stage or which later has been controlled because of the distress resulting from its gratification, may be annulled by an intolerable disgust for foods. This disgust is particularly noticeable as regards meats, and especially fat meats. Flatulence generally is present, and the eructation of gas, which at times may be extremely offensive, gives a short measure of comparative relief.

Vomiting may or may not be a dependable symptom in cancer. Its occurrence and its nature hinge largely upon the degree of obstruction to the onflow of stomach contents, and that depends upon the location of the growth. In cancer imbedded on a pyloric ulcer base, the vomiting, which may have been a marked symptom during the ulcer period, becomes more prominent and more persistent. It is obstructive in nature, urgent and copious. The vomitus frequently consists of long retained food and may be intolerably offensive. There may be but a show of blood in the vomitus or a decided hematemesis may occur.

In cancer located away from the pylorus, generally along the lesser curvature, while there may be no actual mechanical obstruction to the passage of food, there will be some interference therewith. This interference, in many instances, however, will not produce vomiting. The symptoms in prepyloric cancer are constitutional, save for the exception of pain, tenderness, and tumor.

Anemia is the most striking of all the symptoms, both local and general, of gastric cancer. It is a continuously progressive symptom, frequently showing more markedly in the face than elsewhere. Espeeially is its pallor noticeable about the eyes, nose, and mouth. The anemia is occasioned by a more or less continuous loss of blood, which may not be manifested by vomiting, but can be determined by tubage or by examination of the

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stools. The skin is pale, dry, harsh, and wrinkled, and here again is the condition especially noticeable in the face. There is progressive loss of both weight and strength. Languor and indifference become noticeable, and the face shows an accepted, calm, and hopeless resignation.

Cancer sequent upon ulcer may occur after a long typical history of ulcer with its periodical attacks and intervals of latency; or after a few attacks followed by a long interval of repose; or, seemingly, with a complete absence of a precancerous stage, in which the first attack or first illness is the fatal one, in which the ulcer apparently takes on malignancy practically at its very inception. The more this latter class is studied; the more minutely and persistently we delve into the history of preceding years; the more critically we observe and analyze the conditions disclosed on the operating-table, the more strongly the conclusion is forced upon us that at some time, remote it may be, there have been present the symptoms of ulcer—symptoms which, in passing, either did not particularly impress the patient or did not receive their correct interpretation. Ulcer may remain latent for months or years, producing practically no symptoms. Such a latent ulcer without the least warning may cause the acute surgical disasters of hemorrhage or perforation. Further, such an ulcer may undergo malignant changes and, save for waning strength and wasting flesh, produce no determining symptoms until comes profuse hemorrhage, obstruction, or palpable tumor.

Cancer developing on a latent ulcer may be most rapid in its course. In these cases the symptoms appear suddenly while the patient has every reason to believe that, in so far as his stomach at least is concerned, he is in perfect health. Frequently the first symptom is a hematemesis, which may be decidedly profuse. The sudden anemia resulting therefrom not only remains, but also progressively becomes more apparent. Vomiting, with or without blood, may or may not recur. The stomach distress or pain is fairly continuous but variable in intensity. Loss of appetite or a disgust for foods, especially meats, quickly is evident. A palpable tumor is demonstrable early. Strength and flesh rapidly and steadily are lost and death soon closes the scene.

Chronic Pancreatitis.—As practically 80 per cent. of the cases of chronic pancreatitis are terminal events in gallstone disease, the diagnosis of the former will be facilitated greatly by the

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recognition and correct interpretation of the early and slight symptoms of the causal and concurrent infection of the biliary tract. Of the symptoms directly attributable to the pancreatic disease itself, the subjective digestive disturbances generally are overshadowed by those of the associated gall-tract disease and are too indefinite to be of diagnostic value. The valuable symptoms resulting from faulty digestion are found in the altered condition of the feces. The evacuations are frequent, soft, bulky, and pale, and because of their frequency are often erroneously described by the patient as diarrheic. The frequency of the evacuations is due to their increased bulk, which is caused by incomplete digestion, especially of albuminous foods. The normal pigmentation of the feces being due to the presence of an insoluble pigment resulting from the action of the pancreatic juice upon some of the coloring matters of the bile, it necessarily follows that absence from the bowel of either pancreatic juice or bile will result in unpigmented feces.

A microscopical examination of the feces frequently will show the presence of an unusual and decided quantity of undigested muscle fibers, which, while a valuable indication of pancreatic inflammation, is more strongly suggestive of malignant disease of that organ. Fat in the feces is a more reliable symptom of pancreatitis than is the presence of muscle fibers. Occasionally the feces are visibly greasy, but ordinarily a chemical examination will be necessary positively to determine, not alone the presence of fat, but, as well, the form in which it exists. Stercobilin, normally present in the feces, is diminished considerably in quantity in pancreatitis and absent or showing but the slightest trace in cancer of the pancreas.

Cammidge maintains that his test will give a positive reaction in practically all cases of pancreatitis and in about 25 per cent. of the cases of cancer of the pancreas, owing to a zone of pancreatic inflammation surrounding the malignant area. The absence of stercobilin from the feces with a positive Cammidge reaction is urged strongly as indicative of cancer. In my own experience, the findings of Cammidge's reaction have been verified almost invariably by the conditions found upon operation and, consequently, I have held it to be a procedure giving reliable information as to the condition of the pancreas. However, as competent laboratory experts and surgeons recently have pronounced this test to be absolutely worthless, it will be advisable, for the present at least, to rest the diagnosis in pancreatic disease upon

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the anamnestic and physical examinations of the patient and the microscopical examination of the feces.

Loss in weight, frequently referred to as a striking symptom in gallstone disease, is more often the result of the digestive inefficiency and the metabolic disturbances accompanying a pancreatitis secondary to the cholelithiasis. Occurring in connection with the symptoms of gallstones, it should be considered as a marked indication of a complicating pancreatitis. Jaundice appearing in the course of a chronic pancreatitis may result from either one of two different conditions, in each of which it will show certain distinct characteristics. If a gallstone occupying the distal portion of the common duct has caused a pancreatitis by obstruction and infection of the pancreatic duct, it may cause also, synchronously but independently, by obstruction of the common duct, a jaundice which will be characterized by the remissions attending the jaundice of common duct stone. If, on the other hand, the jaundice results, not directly from the common duct stone, but from the compression of the common duct by the swollen head of the inflamed pancreas, then the jaundice remains constant save for the very gradual changes attending the progress of the pancreatitis.

In cancer of the head of the pancreas the gall-bladder is dilated, while in chronic pancreatitis it may be dilated or contracted. If gallstones and their associated infections long have preceded the pancreatitis, the calculous cholecystitis will have caused a sclerosis and contraction of the gall-bladder in many instances. The pressure of the accumulated bile and mucus behind the obstruction caused by the swollen head of the pancreas, will not be sufficient to distend the thickened walls of the sclerosed gall-bladder. On the other hand, if gallstones have not been present or if they have been present but for a short and uneventful period or if they have not caused crippling lesions of the gall-bladder, then the latter will be dilated.

The occurrence of hemorrhage following slight trauma or inconsequential disease occasionally is a striking feature in pancreatic inflammations and is due to the decided urinary elimination of the lime salts of the blood resulting therefrom. Hemorrhages into the skin, giving the appearance of severe contusions, are of frequent occurrence. The slightest bruising of the skin will be followed by the most decided discoloration. Several of my patients have given a history of profuse and prolonged menstrual periods occurring subsequent to other symptoms

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marking the onset of a pancreatitis. While other observers must have noticed this disturbance of the menstrual function, I have not been able to find the least reference thereto in the literature of the subject. A number of instances of severe, even fatal, hemorrhages from various abdominal structures apart from the pancreas are a matter of record.

Pain and tenderness, while generally present, are most variable in their intensity and, in some instances, may be absent entirely. Frequently it is impossible to determine whether these symptoms are caused by a pancreatitis or by the associated gallstone disease. Several of my patients when asked to point out the seat of pain, have outlined accurately the location of the pancreas from the concavity of the duodenum to the spleen. The fact that the pain of gastric ulcer may assume this same location and direction must not be ignored. Tenderness is elicited by pressure over the head of the pancreas, from 1 inch to 2 inches above the umbilicus and to the right of the median line. A slight rigidity of the rectus muscle is more often appreciable than is a distinct swelling in the head of the pancreas, although this swelling can be outlined in many instances. In decided gastroptosis this tenderness of the pancreas frequently is pronounced in the absence of pancreatic inflammation.

Movable Kidney.—As pointed out by Longyear, movable kidney is associated with a prolapsed colon, and the symptoms of one are blended with those of the other. Pain, in a variable degree, is the prominent symptom of movable kidney. Only in a small proportion of the cases are the distinctive attacks known as "Dietl's crises" present. They are sudden in onset, marked by excruciating abdominal pain, attended by nausea and vomiting, followed by the weak and rapid pulse and the cold and leaky skin of collapse, with distended abdomen and the flexed knees and thighs of peritoneal infection. The kidney during the attack is extremely tender and generally is enlarged, pressure thereon causing not only pain, but also nausea and faintness. Jaundice sometimes is present, and the swollen and tender kidney may be mistaken for an inflamed and distended gall-bladder. Or, in some instances, the distressing syndrome may be interpreted as indicating an appendicitis or a ruptured gall-bladder. The pain of these crises might be mistaken in some cases for renal colic, but, as pointed out by Watson and Cunningham, it differs from that pain in that usually it does not radiate along the course of the ureter into the groin.

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In some instances the cessation of the pain is as sudden as was its onset, while in others there is a more prolonged and gradual subsidence. One of my patients through a period of years had innumerable attacks of Dietl's crises which, invariably and immediately could be relieved by replacement of the wandering kidney.

Ordinarily a movable kidney gives rise not so much to actual pain as to a sensation of dragging and weight in the upper abdomen and loin. This discomfort is increased by the erect posture and diminished or abolished by the recumbent posture. During the attacks of pain there may be a burning distress in the stomach, which is uninfluenced by the ingestion of food and which persists for days. Nausea may be present, and occasionally vomiting may occur. Disturbances in urination are quite common, and with the occurrence of Dietl's crises may assume dangerous proportions. A certain, frequently a decided, degree of neurasthenia is present in the great majority of the cases of movable kidney which are productive of symptoms. Constipation or alternating constipation and diarrhea is the rule in movable kidney.

The differentiation of an enlarged gall-bladder from a movable kidney can be accomplished by the physical examination. An enlarged gall-bladder, if movable, is so only from side to side, save for the slight ascent and descent incident to respiration, and seems to swing from under the edge of the ribs, while a movable kidney is movable from above downward and in the reverse direction; a gall-bladder points from the tip of the ninth or tenth rib downward and inward toward a point at, or 1 inch below, the umbilicus, while a kidney is displaced downward and outward; a gall-bladder, when small, is somewhat pear-shaped with something of a neck or depression between it and the liver, but when large appears as a globular tumor intimately connected with the liver, with neither neck nor depression, while the kidney has a shape and feel peculiarly its own; a distended gall-bladder lies near the surface, while a kidney is more deeply situated and passes upward, inward, and deeply backward when replaced.

Appendiceal Mimicry.—In conclusion, I need but remind you that the appendix so successfully may mimic many of the surgical lesions in the upper abdomen as to trick one, careless in his anamnesis, into an unwarranted upper abdominal exploration.

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DISCUSSION.

DR. ROBERT T. MORRIS, New York.—Mr. President: Dr. Smith's paper shows elaborate observation, and I would rise to simplify one or two points. We cannot always make an accurate diagnosis of the presence of gallstones. Not long ago I was called to the western part of the state to see a patient in whose case there had been a difference of opinion as to the diagnosis. Some of the doctors made a diagnosis of gallstones; others of cancer of the liver, and still others advanced the theory that it was malaria. They wanted an expert opinion from New York; I was called, and after examining the patient decided that she had no gallstones. The patient was anemic, cachectic, had lost 50 pounds in weight, and had the characteristic signs of carcinoma of the gallbladder. I told them to give the patient morphine so long as she lived and let her have that comfort until death. I heard nothing about the case until about two months afterward, when I asked about the case on meeting one of the doctors, he said, "Why, just after you told us to give morphine the patient passed a large gallstone, and now she weighs 40 pounds more than she did, and is perfectly well." (Laughter).

Here is one point I want to make in simplification: Do not fall into the trap of speaking of gallstones. Do not make that diagnosis. It is a dangerous thing to do. Gallstones are merely incidental to cholecystitis. If they are there and if you find them, well and good. Do not put yourself in the position of getting the family to look for them in advance. That is a very unfortunate position. You may speak of cholecystitis, but do not speak of gallstones. In perhaps one-fourth of all gallstones cases operated upon in this country gallstones are not found. The patients are often very much improved after operation, they get much better, or recover from all symptoms, and it is simply because we are dealing with cholecystitis complications; the adhesions are separated, and reflex symptoms disappear. We should speak of cholecystitis and say nothing about gallstones unless we happen to find them. I recall one case in which several physicians made a diagnosis of cholelithiasis. The family and the patient expected to see the gallstones in a bottle with a blue ribbon tied around it. Operation was performed, but there were no gallstones found. The patient gained 30 pounds in weight. I have learned better than to make a diagnosis of gallstones since then. A diagnosis of cholecystitis is enough. In cholecytitis there is a desquamation of endothelium on the peritoneal side. Whenever lymph exudate follows this desquamation it will cause adhesions in the upper part of the abdomen and the reflex symptoms may simulate the presence of gallstones. I cannot emphasize too much the point that we should speak of cholecystitis rather than of gallstones. The reason we have not heard much of these cases without gallstones is because doctors have kept the matter quiet. Failure has been talked about less than success.

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Whenever surgeons expect to find a gallstone or gallstones, and do not find them, they say nothing about it. Referring to the question about stomach ulcer, the symptoms that have been mentioned do occur in conditions aside from those of ulcer. It is due to a certain working out of the law of compensation. We may have almost every symptom of ulcer of the stomach secondary to these bile-tract adhesions, secondary to the presence of loose kidney or eye strain, and the patients will have symptoms of ulcer of the stomach for several days or a week or two weeks, and will recover absolutely. Two months later they will go through the same thing again, and months later they will give the same history, and this periodicity may just as well belong to the reflex class of patients, even to those in which the symptoms belong to the neurasthenic group. Patients are taken with nervous prostration and with symptoms of ulcer of the stomach. The explanation is perhaps this: at one time, when symptoms occur, the resistance is low. Patients will have marked symptoms and recover from them. They will carry the source of irritation for weeks or months until something lessons the resistance and down they go, and you have the whole history over again, no matter whether the patient has a loose kidney, or eye strain, producing symptoms of ulcer of the stomach. Just a little to the right of the navel you find the right lumbar ganglia, and when you press deeply there you have tenderness which belongs to the irritative or infective lesions of the appendix. That 1 inch will mislead you by many yards, however, unless you determine that the left lumbar ganglia are not hypersensitive, at the time when the right lumbar ganglia are hypersenstitive.

DR. R. R. HUGGINS, Pittsburg, Pa.—Mr. President: Since Dr. Morris brought this matter to our attention several years ago it has been a source of considerable interest and in all examinations I have tried to elicit these signs, if present. A very great difficulty in determining the value of this sign is first to eliminate the condition that Dr. Morris has dwelt most upon—which is the neurotic or neurasthenic patient.

It is very hard sometimes when we have a tender spot at the right or left of the umbilicus to determine whether it is really caused by some pathological condition in the appendix or pelvic organs or due to a hypersensitive condition of the lumbar plexus which accompanies a general neurasthenia.

It is a valuable aid in diagnosis and worthy of careful study. There is no question about the necessity of removing irritating lesions when present. There is no doubt that often times the neurasthenic is cured by operation. There is no doubt, furthermore, that borderline cases of insanity are occasionally cured through operative measures.

DR. JOSEPH PRICE, Philadelphia.—It gives me great pleasure to endorse and emphasize what Dr. Morris has said in regard to nomenclature. In a good number of the neglected cases of

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appendicitis, the cold storage cases, and the cases that have been rubbed by the osteopath for a week or so, we find the old nomenclature of appendicitis fitting beautifully. One can easily call it cecitis, typhlitis, perityphiltis, enterocolitis, or wet or dry gripes. (Laughter.) It is an easy matter to pick up the cecum and ileum, and it will part like wet blotting-paper. Those conditions are very common. Just here I want to offer the criticism that Dr. Deaver made at the College of Physicians and Surgeons in a recent paper covering this same ground. The paper was written to condemn the work of the so-called internists, men whom we have so many good reasons to welcome, but we feel that in the so-called internists we have a new speciality of great importance, that is, those with advanced knowledge of pathology and diagnosis. Not long since I traveled to a remote corner of the western part of this state and stumbled on a big gallstone that had been neglected for some time, and if we had specialists in the shape of internists, some one would have recognized the early pathology, and we would get these cases early. But we have been sorely disappointed, and this disappointment is due to the prejudice of the internist or new specialist to surgery. It is impossible to cure him of his prejudice, and we can only do it by his witnessing operations and the ravages of latent pathology. Moynihau has written a little book on living pathology, but we should say more about it and give it more emphasis at the operating-table.

I scarcely agree with Dr. Morris as to the errors in diagnosis in gallstones. It is very seldom that I have found surgeons—and I know them to be perfectly honorable and truthful—in the habit of shirking a diagnosis. Gallstone disease is very common, and fearfully neglected. It is a common thing to find the gallbladder and surrounding structures all fused and disorganized, with abscesses and suppuration in the region of the gallbladder. I have had seven consecutive cases of suppuration of the gallbladder, and in these I not only found pus, but gallstones and a variety of filth, and since the visit of Kehr to Philadelphia, who lost four cases from operation, as I thought, I was informed that I was mistaken. No, this man said, one escaped, and it took me some time to free the duodenum from his incision. It is my impression that in closing the incision two or three stitches were passed through the pylorus, and it took considerable dissection to free it and to free the transverse colon and gallbladder. It was quite a while before I found a gallbladder as large as a banana. Its walls were very much thickened. After I emptied it, it stood open like a banana peel. I removed the gallstones, and the patient made a beautiful recovery. Six months later, in spite of some of the efforts and plans recommend by Dr. Morris, there was obstruction of the bowel. Again I opened the abdomen, and freed adhesions to the ileum, putting the viscera in normal relations and removing the gallbladder. That man is now driving an engine and is perfectly

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healthy. I simply allude to this case in particular to demonstrate the importance of persistent, determined, dogmatic surgery in dealing with pathological or postoperative lesions. It is common for some operators to leave pathological conditions that they should not. That is a common practice in dealing with the appendix. Quite a few men resort to puncture methods which ought to be condemned by all good surgeons, put in a little drain or a wick of gauze, leaving sequelæ to annoy other surgeons or to necessitate repeated operations. More people are dying from obstructions due to neglected pathological or postoperative lesions than from well-done operations.

DR. ROLAND E. SKEEL, Cleveland.—I wish to congratulate Dr. Smith upon his remarkable paper, as I think he has concentrated in this one essay more than I have had the pleasure of hearing before. There is one criticism however that I would like to make and that is if one were to secure as complete and positive a history as would be necessary in order to make diagnosis from the history alone then he must meet with a most unusually intelligent class of patients. There is no possibility of obtaining from the average patient so accurate a history as to lead to accurate diagnosis or of securing a typical history such as Dr. Smith has so graphically described and as Monyihan has also described in his new work upon Duodenal Ulcer. Monyihan has I believe made the statement that he can make diagnosis of duodenal ulcer from the anamnesis alone and that an examination is really superfluous. I would call attention in this connection to the fact that the view-point of the average patient is much limited when they apply for examination, by the physician asking them leading questions; for instance: how long after meals is it before your pain occurs? Does it come on two hours after meals? Yes. How long does the pain last, four or five hours after meals? Yes. Unless the patient is a medical man trained in medical habits of observation the history which the patient gives under these circumstances will completely lead one astray because there is not one patient out of a hundred with a sufficient amount of penetration or understanding of what is essential in the history of his case to carry him back two, three or four years and still be able to give a clear cut picture of his symptoms, and he is more mislead than ever by the suggestions implied in the questions which are put to him. Aside from this criticism, however, I think Dr. Smith has presented the best paper on this subject that we have heard in many years.

DR. SMITH (closing the discussion).—There is very little I care to say in reply. The suggestions of Dr. Morris are certainly good ones as regards the naming of these conditions before we operate on patients. It has long been a custom of mine to explain to patients very frankly that we are operating for inflammatory conditions of the gall tract, which really cause the symptoms rather than for gallstones. If we get gallstones we are very much ahead in the game.

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As to the cases referred to in which there are gallstones or as to the diagnosis between gallstones and cancer. In a number of recent cases, five especially, which occurred in my practice, I have been led by the results to feel that I am almost ready to operate in every case of cancer of the gallbladder or cancer of the gall tract that is to explore suspicious cases. I have been led to that because of these five recent cases, in all of which I even more than suspected cancer. Of this number I found two that were cancer, which were necessarily left alone, and three which were not. In these three cases the gallbladders were full of stones, with adhesions to the duodenum on one side and with the colon piled up on the other, with a great mass there which gave the impression to the examining hand of cancer of the gallbladder. The obstructive symptoms from the adhesions were quite similar to those obtained in certain cases of cancer of the biliary tract, and yet these three out of five cases were relieved temporarily, if not permanently, by section.

This question referred to by Dr. Skeel of getting the history of patients is a very close one to me. It seems to me, from observation not only of surgeons but of general practitioners particularly, that they do not give the time to the examination and to the history of patients which they should. A patient rushes into a doctor's office and begins to relate some symptoms, and the doctor picks up the leading symptoms that the patient mentions, asks a few questions and prescribes for the symptoms, and does not find out the underlying condition. We must demand of the general practitioner—and we must do the same thing ourselves—that he sees fewer cases, if necessary, and charge better fees, and do a great deal better work and produce better results. It is unnecessary in getting the anamnesis of a patient to suggest or to ask leading questions. Listen to the old woman's story until she has told it, and pick out from her story the little points which may lead you to a certain conclusion in questioning her.

Dr. Skeel has made reference to the work of Mr. Monyihan, and I will refer briefly to his method in this particular. His service in Leeds General Infirmary comprises four weeks, then he is off, and then he is on four weeks again. They cannot keep a patient in the infimary longer than that time. He keeps the average patient in the infirmary for seven days before operating, and during that time he is not asking leading questions, but listening to stories that the patients tell about their condition. His internes and nurses listen to these stories and ask questions, and at the end of seven days Mr. Monyihan has obtained a knowledge of the patient's condition which very seldom leads him astray in making diagnosis. We can all do the same. These histories can be obtained, and it is our own fault if we do not get them, and there is a satisfaction in making a diagnosis on the history of the patient when these early symptoms are so important, and that alone is sufficient recompense for the time which we must spend.

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PROBLEMS IN UTERINE CANCER.

BY

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THE problems of uterine cancer are so numerous that it would be impossible in the limits given to this paper to discuss them all. There are three of surpassing importance, upon which I shall not dwell, one as to its etiology, the second as to its antidote, and third, its pathology. It is a source of profound gratification that investigation is being carried forward along these lines by those eminently fitted for the task. Whether or not the cause will be discovered remains to be seen, but it is devoutly hoped their investigation will lead to the discovery of an antidote.

It was my privilege five years ago to present to this body a paper on the palliative treatment of uterine cancer. Since that time I have read papers before various medical societies, and contributed others to the medical press on the same general topic. I have no apology to offer for again bringing to the notice of this distinguished body the same problems and the same arguments, believing as I do that there are none of greater importance to engross professional thought, or which from the humanitarian standpoint, and that of preventive medicine, have greater claims to public sympathy.

For convenience of comparison the members of the medical profession may be divided into three classes: 1. That great class who make no serious effort at early diagnosis, whose patients drift on to the stage of hopeless interference and in which no rational effort save the administration of opiates and the vaginal douche is made for their relief.

2. A small class who make a diagnosis at an earlier period, not early enough as a rule for radical operation, who are so convinced that uterine cancer is absolutely or practically incurable that they put them in the "inoperable list," doing

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little or nothing in a practical way for their palliation, and their patients join the helpless throng of unfortunates.

3. The slowly increasing few practitioners who use every endeavor for early diagnosis, who save some by early radical operation, who regard no case as necessarily "inoperable" for palliative purposes save in the final stage, and who adopt the best recognized method of palliative treatment.

The underlying reasons why the medical profession should be thoroughly awake to the necessities of the situation, are so plain that nothing but wilful neglect can discourage or obscure their preeminent importance. The frequency, the suffering, and the mortality attending uterine cancer are, or should be, of themselves sufficient argument why professional sentiment should be alert to this question.

First, as to its frequency: statistics show (and whether they are absolutely accurate is immaterial) that one woman out of every fourteen dies of cancer, and that after the age of thirty-five, the mortality rises to one in nine. Second, as to suffering, which is always present in cancer (it is no less so in uterine cancer) and is one of the most unholy pictures possible to contemplate. The mortality is large, almost commensurate with the entire number of cases. The aggregate number of fatalities is difficult to ascertain, for the reason that boards of health do not require notification of its presence, and the further reason that the cause of death is not always properly given in death certificates.

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Enough is known to appeal to the professional mind, the knowledge of which should serve as a stimulant to endeavor along the lines of preventive medicine, though preventive medicine in cancer has a very limited practical application save in uterine cancer, and then chiefly in cervical involvement. The traumatism incident to parturition is a factor in uterine malignancy which cannot be ignored. Failure to repair cervical lacerations is responsible for an undetermined but large percentage of these cases, and until this subject is universally understood and the remedy applied, the unavoidable consequences must follow. Pertinent to this is the following case of a woman from Mobile, Alabama, for whom I repaired the cervix in 1888. In September of this year she comes to me suffering from cancer of the uterine body—with a cervix of normal appearance. The comparatively few cases of uterine cancer in nulliparous women has a most important bearing on this subject. There

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is a growing belief that cancer is contagious and infectious under certain conditions and this is entitled to its full measure of influence. Whether cancer is or is not of parasitic origin is undetermined, other theories having their advocates and believers. The frequency of cancer in certain families is suggestive that heredity is a factor in some cases, but accurate knowledge as to its cause will alone determine whether it is congenital or acquired. Coley, whose large experience entitles his opinion to much weight claims that after operative interference the use of the mixed serums of erysipelas and prodigiosus has some inhibitive influence on its recurrence.

The first and greatest impediment from the professional standpoint is lack of appreciation on the part of many, far too many, physicians to the imperative necessity of early diagnosis. The apathy and unconcern in some quarters is simply astounding. Every general practitioner should be awake to the necessity of early and accurate differentiation from other ailments peculiar to women which at the outset have symptoms in common with it. I cannot dwell on the subject of diagnosis, but the full clinical picture is not necessary to establish the presence of uterine cancer; neither does absence of pain make impossible its presence. Purulent v aginal discharge, so-called irregular menstruation, the various menorrhagias and other symptoms appearing during or subsequent to the menstrual period, due to the traumatism incident to parturition, or to other causes, demand and are entitled to prompt differentiation as to benignancy or malignancy. Between the hesitancy of women with such symptoms, who fail to seek advice either from undue delicacy, or ignorance of their meaning, and the indifference or inability to make a diagnosis is a terrible hiatus, and relief can only come when the chasm is closed. I would get near the heart and conscience of every practitioner of medicine in my appeal for him to do something, and that at once in arriving at safe conclusions.

Every physician owes it, not less to himself than to his patients, to calmly consider the interests involved. The safety of the patient may, and often does, bear a close relation to early and accurate diagnosis. The proposition is too axiomatic to claim further discussion. It is useless to ignore the difficulties involved in such a differentiation. If the attendant is in doubt, why not give the patient the benefit of one familiar and skilled in such work? There would be no hesitation on the part of

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general practitioners to seek the advice of skilled specialists in grave surgical emergencies, as seen in serious involvement of the eye, in obscure abdominal disease, or in dangerous lesions involving the brain. Why then in these cases temporize or delay? Until the rank and file of the medical profession are ready and willing to give these cases the best skill at their command, the mortality of uterine cancer will not materially diminish.

The time is ripe when all individual practitioners, state and county medical societies, and organizations like this, should act singly and collectively to impress on the medical profession and all women the imperative need of such action.

This feature of the subject I will allude to later on, I desire briefly to discuss the treatment of uterine cancer, which should be radical or palliative, according to the stage of the disease. That there may be no doubt as to my attitude on this subject, I desire to state in unequivocal terms my belief that early extirpation of the uterus, in our present state of knowledge, offers the best chance of cure. If in cervical cancer there is any considerable involvement of the vaginal structure, primary hysterectomy cannot be undertaken. In these cases the first indication is high amputation of the cervix, and removal of the vaginal involvement. If healing follows, it will be the function of the attendant to decide whether it is better to do hysterectomy or to keep the case under close observation. If healing of the vaginal surface is complete, but the uterine stump does not heal, hysterectomy may and usually should be undertaken, providing there is normal mobility of the uterine body. I have done abdominal hysterectomy in such cases as a secondary operation—several patients being alive at this time after a period of from eight to nine years. One of these cases which I reported as cured, and had lost sight of for a period of more than six years, came to me in July seeking relief from cystocele and rectocele, with no evidence of cancerous disease. When high cervical amputation has taken place the difficulties attending subsequent vaginal hysterectomy are such as to make it difficult if not impracticable.

In case of primary cancer of the uterine body the problem of hysterectomy will hinge largely on the presence or absence of periuterine involvement. Fixation of the uterus, if not dependent on other coexisting causes, contraindicates hysterectomy. It is most desirable under such conditions that accurate differentiation be made. Full anesthesia with the hand in the rectum will best facilitate arriving at a safe conclusion. If the parame-

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tria are involved, radical measures are contraindicated, but no one would assume to make an absolute diagnosis as to slight involvement of the lymphatics in the parametria. That belongs to the domain of microscopical research. Infection of uterine structure makes possible more or less remote secondary deposits not distinguishable by bi-manual palpation. The balance of sound judgment, practical experience, and the accepted pathologic development must be our guide in matters of operative interference. When, subsequent to the removal of the cervix and the vaginal growth, hysterectomy is expedient, the abdominal route should be chosen; first, because vaginal hysterectomy is neither easy nor practicable; second, as little interference as possible should be made with the remaining cicatrix.

The proposition to do hysterectomy for cancer of the body as a secondary operation is, I am persuaded, a matter which the average practitioner and many operators will not entertain, as being contrary to accepted theories; but, tested by practical experience in a certain class of cases, its value cannot be gainsaid. It is for this reason that I appeal to every such man to cultivate a tolerant spirit and not be too ready to condemn a step which is not in harmony with his preconceived opinion. If such men were to analyze the basis of their attitude, they would probably discover that it rested in absolute unbelief of the curability of uterine malignancy or of effective palliative treatment, and a prejudice so strong as forbids them to consider a revision of opinion of the efficiency of either radical or palliative treatment of uterine cancer.

The palliative treatment most in vogue consists of the application of potent escharotics, as arsenical paste, caustic potash, etc. The objection to their use is twofold; first, inability to limit the area of their destructive influence, and second, the violent pain attending their application. As a palliative measure the remedy par excellence is the thermo-cautery. In well equipped hospitals the electric cautery leaves nothing to be desired. The difficulty of keeping in order a portable electric-cautery apparatus often makes the Pacquelin cautery the method to be adopted. I have done more cautery operations with the Pacquelin than the electric method for reasons above suggested; but with properly selected accessories, I do not believe as some have claimed that the difference in effectiveness is vital. When one is reduced to the necessity of using a Pacquelin it is hazardous for obvious reasons to attempt the operation with a single apparatus. In either

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case a variety of straight and curved platinum knives and dome-shaped instruments are needful. Tact in protecting the vaginal structures from undue heat, and skill with experience in removing all diseased structures compatible with the anatomical relations of the healthy and diseased structure is needful to the best results. It is important to keep in mind the possibility of doing conservative work by the thermic method, when there is primary involvement of the uterine body, as well as when it is secondary to high cervical amputation, even in periuterine involvement.

By the tactful and judicial use of platinum instruments it is possible in a greater or less number of cases to remove all of the uterine body, save little more than a shell of the uterus and its peritoneal covering, thereby prolonging the life and materially lessening the suffering of the patient. A burn penetrating through the peritoneum is unimportant if it does not involve the ureters, the intestines, the bladder, or bloodvessels.

While I have never had occasion to open the abdomen for the purpose of observing how far it was safe to push the intrauterine application of the cautery, I see no contraindication that it might not be done with safety and advantage. Any desiring more specific direction as to the technic of the operation are referred to my article entitled, "The Rational Treatment of so-called Inoperable Uterine Cancer," appearing in the April number of "The International Journal of Surgery."

In this connection its value as attested by the experience of the late Dr. John Byrne of Brooklyn, which I referred to in my paper five years ago, is most instructive and gratifying. Out of nearly 400 electrocautery palliative operations—not selected cases—about 20 per cent. of his cases were alive after five years. In my own experience the results have been no less satisfactory, though in no instance was any hope held out for recovery. Other palliative measures having value and entitled to careful consideration are the Roentgen ray and radium. My experience with radium in insufficient to enable me to speak authoritatively as to its value. So far, the most I can say is that it seems to act in some degree in favorably influencing better granulation, and to apparently diminish the tendency to bleeding. Two unsolved problems in the use of the thermocautery are the inhibitive influence it may have on cancer cells considerably beyond the area of actual destruction of tissue, and also the power of nature to replace structures which have been devital-

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ized by heat through lymphatic absorptions and deposit of organizable deposits.

I use the above terms "unsolved problems" in their technical sense because, when considered from the clinical aspect, by the results following I am pursuaded that it does happen, and on no other hypothesis can the effectiveness of the thermocautery be explained.

The unwillingness of those who decline to test its power and refuse to accept the experience of those who have is a matter of profound regret.

An article on radium, appearing in "The Journal of American Association," for July 9, by Dr. Robert Abbe, of New York City, whose opinion is entitled to weight, gives little hope of its utility save in cutaneous cancer. So also the *x*-ray has in my experence produced no cures. Perhaps the most that can be said is that it may exert a temporary modifying influence.

At this time, while study and research into the etiology of malignant disease gives hope that the antidote will soon be found, our principal efforts for the radical and palliative of this most distressing malady, are confined to hysterectomy and the employment of the thermocautery.

While progress is slow in the adoption of the thermocautery as a palliative measure, it is nevertheless apparent. Abroad and at home there is a growing appreciation of Byrnes' method. This was apparent at a meeting of The Section of Obstetrics and Gynecology at the Atlantic City meeting of the American Medical Association in June, 1909. In the discussion of two papers on "The Palliative Treatment of Uterine Cancer," written independent of each other, read by Dr. Boldt, of New York City, and myself, in the outspoken attitude of Kelly-Frederick, Polak, Wetherel, and others.

Frederick's article before the Section of Obstetrics and Gynecology of the June meeting of the American Medical Association was a masterly argument for early diagnosis and the effectiveness of the thermocautery as a "palliative" measure. His experience confirms the experience of others that cure in some cases has followed the thermic treatment even when altogether unexpected. No doubt the recovery was more frequent in squamous-celled involvement of the cervix than in adenocarcinoma. Ries speaks with satisfaction of the power of thermocautery and acetone as a palliative measure in cervical carcinoma

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but records no cures. The experience of Keene, McNaughton, and McEvitt confirm the observation of Dr. Byrne.

As justifying conservative work in unpropitious circumstances, I desire to record the following: Two and a half years ago I saw with a well-known up-state surgeon a case of cervical carcinoma, involving not only the cervix but a portion of the vagina anteriorly, and extending over the urethra, which was just commencing to break down. I advised an immediate thermocautery operation which was rejected. Just after the patient (aged about forty-five) then cachectic, was seen by one of the most eminent metropolitan professors of gynecology and one of my confrères of the Long Island College Hospital. The metropolitan representative advised against interference, but the other gentleman did a thermic operation, with the result that healing took place and at the end of two years she had enjoyed good health, though about that time there was some return of the growth, and I have lost track of the case.

The thermocautery treatment is applicable to all stages of cervical cancer, and most cases of uterine involvement, save in the final stage. The *modus operandi* seems to be, first, its power to destroy or inhibit specific germs beyond the area of actual destruction of tissue; second, by closing the lymphatics, thereby limiting septic absorption; third, promoting healing, diminishing hemorrhage and purulent discharge; fourth, when the distruction of malignant growth extends to normal structure, the advent of healthy cicatrization; fifth, that by following the use of the cautery by daily gentle irrigation with one of the creasol compounds of not more than 1 dram to a quart, or a weak solution of permanganate of potassium (always avoiding the peroxide of hydrogen which is irritating and likely to provoke hemorrhage), and the daily dressing by oxid-zinc gauze, the suffering is greatly lessened and sometimes almost wanting until the unavoidable termination comes; sixth, that occasional well-authenticated cures have followed this treatment, in which no expectation of cure was suggested. These dressings should be undertaken with the utmost gentleness, usually with the patient in the Sims position, and the employment of a Sims speculum, thereby avoiding as far as possible all pressure on diseased surfaces.

While this treatment demands the expenditure of much time and labor on the part of the attendant, I have demonstrated to my entire satisfaction that no other known method of treatment can contribute so much to the comfort of the patient. In view

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of these facts the hope is reiterated that many practitioners who have become disheartened and disappointed in every palliative measure will adopt and faithfully test the merits of this treatment. It should be added, in this connection, that when properly applied so that burning of healthy vaginal and vaginocutaneous surface is avoided, there is usually little or no pain following its use. And there is also no reason *per se* why this treatment may not be repeated whenever indicated.

Apart from the need of activity and discrimination among medical men, there remain two other problems of commanding importance. First, that such knowledge should be disseminated among women as will lead them to seek early advice under conditions such as have been enumerated. This involves on their part such an appreciation of the necessities of the situation as will enable them to escape the promptings of a mistaken modesty, that they may know and that early, whether their ailments are benign or malignant. Second, that public interest should be awakened among philanthropic men and women as has been for those suffering from tuberculosis, which will provide in every populous community, or every considerable area of sparsely settled territory, facilities for the care of the numerous cases of uterine cancer, the possessor of which, if without financial resources that will bring them skilled medical and surgical treatment and efficient nursing. Everywhere the facilities for the care of incurables are only too apparent, but in this disease, the most painful and loathsome, of which multitudes of women are hopeless victims, the demands of our common humanity require provision should be made for their comfort and relief. Without doubt, if the terrible suffering of this most unfortunate class were known and appreciated, swift relief would be forthcoming.

At the meeting of the Section of Obstetrics and Gynecology, American Medical Association in 1909 already referred to, the feature of preventive medicine came up under the discussion of the papers on the palliative treatment of uterine cancer read by Dr. Boldt and myself, but no action was taken.

At the annual meeting of the Medical Society of the State of New York, held in January, 1910, I offered a resolution calling for the appointment of a committee to consider and report to the society on these questions. It was referred to the council of the Society, but as yet I have been unable to secure their favorable action. This resolution, purposely, did not touch the question

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of investigation of the etiology of cancer, which is being pursued in New York State, in New York City and Buffalo, as well as at other points, by those whose qualifications command the confidence of the medical profession, and inspire the hope that the cause and antidote of cancer will soon be known. If the medical society of the State of New York would exert the full measure of its influence to impress on every practitioner in the State of New York the necessity of early accurate diagnosis in these cases, and the reasons why the public should be interested in caring for the needs of this unfortunate class, it would give the movement an impetus which is bound to come with or independent of their action.

It is painfully evident that the professional mind is not yet sufficiently awake to the necessities of the situation to undertake the exercise of the prerogative which naturally falls within its legitimate province, the exercise of which will mark a new era in the philanthropic work of a philanthropic profession. It must be equally evident to every practitioner whose duties bring to his observation this class of cases, that a campaign of education within and without the medical profession is needful to a proper appreciation of this work.

It is my desire and hope on this occasion that this society will consider in a practical way these questions. To this end I invoke the mature judgment, cooperation, and influence of this body to the formation of a plan and the promulgation of measures by which the condition of women with cancer will be ameliorated.

In view of these facts that one woman in every fourteen dies of cancer, and that after the age of thirty-five the mortality rises to one in nine—a percentage of over 11 per cent.—that the suffering it involves is greater than that of almost any known disease, that in the present state of our knowledge relief can only come through early diagnosis, and then by appropriate radical and palliative treatment, that the principal impediment to such early diagnosis is found in the want of appreciation of medical men, of the early differentiation of symptoms which distinguish between malignancy and benignancy, that want of knowledge on the part of women to know the symptoms which require early advice, coupled too often with a false modesty to disclose their condition, and that inadequate facilities for the care of such cases make practical relief difficult if not impossible.

It is resolved, *first*, that this society by its president appoint a committee of three (one of which shall be the president him-

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self), whose duty it shall be to formulate a plan whereby all practitioners of medicine shall be urged to faithfulness in making early diagnosis of suspected uterine cancer, and if doubt exists to secure the opinion of those whose experience and judgment may be regarded as authoritative.

Second, that this committee be directed to devise some method by which, along ethical lines, women may be properly informed why they should seek early advice in menstrual disorders and other conditions peculiar to themselves, and that it further consider some more comprehensive plan whereby a general diffusion of appropriate and vital knowledge on this important subject can be secured.

Third, that emphasis be given to the fact that more helpful and scientific relief can be given to this most unfortunate class of patients, than that limited to the administration of opiates and the use of the vaginal douche.

Fourth, that the time is ripe when in every populous community and some defined area of less densely settled districts, homes and hospitals should be maintained, wherein those of this helpless and neglected class (who are without financial resources) may receive adequate treatment and humane nursing. In view of the willingness of a charitable and responsive public to respond to the call of humanity to aid unfortunate sufferers, as evinced in the generous help of those suffering from tuberculosis, a campaign be undertaken under the auspices of the medical profession, public-spirited citizens, and intelligent women, for the relief of those whose suffering and helplessness is unequaled by any other class in the community.

Fifth, that this committee be instructed to consider in connection with the foregoing resolutions, the question of "ways and means" to make the work contemplated possible of accomplishment.

Sixth, that this committee be directed to report at this, or the next meeting of the association, as in their wisdom seems best, and that the committee be empowered to fill vacancies in its membership and appoint sub-committees if deemed expedient, and to perform such other duties as are needful in carrying out the purpose of this resolution.

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STATISTICS OF CANCER IN THE FEMALE.

BY

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To get reliable statistics on such a subject as cancer it is not only necessary to see that the information obtained on this subject is accurate, but also that it is extensive enough to avoid errors of chance. With this in view we collected data bearing on the question of cancer from the mortality reports of the United States Bureau of Census covering a period of eight years, from 1900 to 1908. But the information thus obtained has some drawbacks In the first place it gives us only the *mortality* of cancer, while cancer with its comparatively early diagnosis, improved operative technic, and rather general application of radical surgery, cannot at present be considered an absolutely fatal disease. Many cancer cases are completely cured by operative interference, and many die from intercurrent diseases. Of such cancer cases the Bureau of Census can have no record. Again, under the term cancer, the Bureau includes all malignant tumors; its cancer statistics, therefore, are in reality statistics of all the malignant tumors. To make our statistics more accurate and more complete we supplemented the data obtained from the mortality report of the census with those obtained from hospital reports. Hospital reports not only have none of the drawbacks mentioned, but in addition give us a fair statistical idea as to how early cancer is being diagnosed, an important practical point in connection with the cancer problem.

To get the hospital statistics we communicated with 604 leading hospitals in this country and Canada, and requested them to send us their latest annual reports. One hundred and fifteen of them reported that they had not been issuing any report, 209 did not answer our communication, and 280 sent us their latest report. Of these 280, sixty-one contained no medical statistics, and of the 219 in which we did find statistics, 125 had no sex division, and 40 gave no results.

This paper, then, is based on statistical data collected from the

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latest eight annual reports of the Bureau or Census, and the latest reports of 219 hospitals.

TABLE 1.

Death Rate of Cancer in General.

According to the registration area:	
Total male deaths	2,405,737
Total female deaths	2,065,505
Male deaths past thirty-five years	1,257,635
Female deaths past thirty-five years	1,082,794
Total male deaths from cancer	71,939
Total female deaths from cancer	116,210
Male deaths from cancer past thirty-five years	67,685
Female deaths from cancer past thirty-five years	110,375
According to the 219 hospital reports:	
Male cancer cases	2,754
Female cancer cases	5,469
Cancer cases unclassified as to sex	4,405

The above cited figures show that the proportion of deaths from cancer to the total number of deaths from all causes are: in females 1 to 17.7; in males 1 to 33.4. The proportion of deaths from cancer past thirty-five years to the total number of deaths past thirty-five years are: in females 1 to 9.8; in males 1 to 18.5. Taking the relative frequency of cancer in both sexes we find that according to the mortality statistics of the United States Bureau of Census 62 per cent. of those that die of cancer are females, and 38 per cent. males; according to the hospital statistics 66.5 per cent. are females, and 33.5 per cent. males. We see, then, that cancer is an exceedingly common disease in the female, and it is met with about twice as frequently in females as in males.

Gradual Increase in Cancer of Females.

TABLE 2.

Proportion of Cancer Mortality to Total Mortality from Bureau of Census Records 1900 to 1908.

Year	Total No. of female deaths from all causes	Total female cancer deaths	Frequency of cancer
1900	253,242	11,067	1 to 22.8
1901	241,333	12,459	1 to 19.3
1902	234,092	12,802	1 to 18.2
1903	232,569	13,889	1 to 16.8
1904	254,474	14,260	1 to 17.8
1905	252,270	15,109	1 to 16.7
1906	276,536	17,943	1 to 15.4
1907	310,692	18,681	1 to 16.6

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As we see from this table there is quite an increase in cancer from 1900 to 1903 (from 1 in 2 .8 to 1 in 16.4) but from 1903 to 1907 the variation is not so marked. The table given by the Census based on the number of cancer cases per 100,000 population shows a more definite and continuous increase, as follows:

TABLE 3.

Deaths from Cancer	*per 100,000 Population.*
1900	63
1901	64.5
1902	65.3
1903	68.3
1904	70.6
1905	72.1
1906	70.8
1907	73.1
1908	74.3

Whether based on mortality figures or population figures there is clearly shown an increase in cancer from 1900 to 1908. In the eight years there was an increase in cancer mortality from 1 in 22.8 deaths to 1 in 16.6 deaths or from 63 per 100,000 population to 74.3.

The question is frequently raised whether the graudal increase in mortality is not due to changes in the methods of reporting deaths and to the greater accuracy in the diagnosis of cancer, especially in view of the slight variation for the five years between 1903 and 1907. There is no question that the bureaus of health of the large cities have lately been taking better care of the mortality statistics. Besides the gradual improvement of the medical schools, the rapid increase of hospitals with their laboratories, and the more general application of surgical treatment for surgical diseases, all increased the possiblitiies of more accurate diagnosis. But these factors cannot account completely for the statistical increase of cancer mortality, for if they could, there would have been no such increase in the easily recognized cancers of the skin and breasts, as the following table indicates.

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TABLE 4.

Increase of Cancer of Skin and Breast.

Year	Total mortality	Cancer of skin No.	Cancer of skin Proportion	Cancer of Breasts No.	Cancer of Breasts Proportion
1900	253,242	208	1:1218	1395	1:1815
1901	241,333	227	1:1067	1621	1:1488
1902	234,092	232	1:1009	1495	1:1565
1903	232,569	268	1:867	1772	1:1313
1904	254,474	296	1:853	1771	1:1437
1905	252,270	279	1:904	1994	1:1265
1906	276,536	328	1:843	2511	1 1101
1907	310,692	397	1:782	2590	1:1199

Thus we see that in eight years cancer of the skin increased in frequency from 1 in 1218 to 1 in 782, and cancer of the breasts from 1 in 1815 to 1 in 1199. This increase in the frequency of the cancer of the skin and breast confirms unquestionably the belief that cancer is on the increase.

Age and Cancer.

TABLE 5.

Frequency of Cancer of the Female at Different Ages.

Age	Female total deaths from all causes	Female total deaths from cancer	Proportion
1 to 5 years	558,643	396	1 to 1411
5 to 10 years	54,449	159	1 to 342
10 to 15 years	34,952	179	1 to 195
15 to 20 years	60,299	332	1 to 182
20 to 25 years	88,935	646	1 to 138
25 to 30 years	95,160	1,609	1 to 59
30 to 35 years	90,273	3,423	1 to 26
35 to 40 years	91,051	6,583	1 to 14
40 to 45 years	85,107	10,045	1 to 8
45 to 50 years	84,515	12,785	1 to 7
50 to 55 years	92,467	12,933	1 to 7
55 to 60 years	97,171	14,722	1 to 7
60 to 65 years	113,985	14,924	1 to 8
65 to 70 years	122,395	13,111	1 to 9
70 to 75 years	124,154	10,599	1 to 12
above 75 years	257,521	12,787	1 to 20

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TABLE 6.

The Frequency of Cancer in the Corresponding Ages of both Sexes.

Age	Male	Female
1 to 5	1:1436	1:1411
5 to 10	1: 252	1: 342
10 to 15	1: 173	1: 195
15 to 20	1: 159	1: 182
20 to 25	1: 160	1: 138
25 to 30	1: 126	1: 59
30 to 35	1: 73	1: 26
35 to 40	1: 44	1: 14
40 to 45	1: 29	1: 8
45 to 50	1: 20	1: 7
50 to 55	1: 16	1: 7
55 to 60	1: 13	1: 7
60 to 65	1: 12	1: 8
65 to 70	1: 13	1: 9
70 to 75	1: 15	1: 12
above 75	1: 21	1: 20

We see from the above two tables that the highest mortality from cancer in the female is between forty-five and sixty, reaching the proportion of 1 to 7, the mortality gradually diminishing as age increases or decreases. The highest mortality from cancer in the male is at the age between sixty and sixty-five in the proportion of 1 to 12. Only at the age between five and twenty is the mortality from cancer in the male higher than that in the female. In this connection it should be remembered that no distinction is made by the United States Bureau of Census between carcinoma and the other malignant tumors. The cancer mortality of the earlier years is, therefore, in all probability accounted for chiefly by the mortality from sarcoma, the malignant disease of the young.

CANCER GROUPS.

The Bureau of Census following the international classification divides the different locations of cancer into seven groups: (1) Stomach and liver, (2) intestines, (3) mouth, (4) skin, (5) breast, (6) female sexual organs, and (7) miscellaneous.

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Number of Cancers of the Different Groups of Both Sexes.

TABLE 7.

According to the U. S. Census:

	Stomach and liver	Intestines	Mouth	Skin	Breast	F. sexual organs	Miscellaneous
Female..	35,213	11,583	1111	2235	15,148	27,490	23,430
Male ...	34,605	8,613	4455	4153	107	not given	20,006

TABLE 8.

According to the Hospital Reports:

	Stomach and liver	Intestines	Mouth	Skin	Breast	F. sexual organs	Miscellaneous
Female..	334	275	48	146	1619	2753	294
Male ...	616	269	394	292	414	321	448
Sex undefined	1098	569	396	682	669		1107

From the tables 7 and 8 we can construct the following table:

TABLE 9.

Comparison of the Percentages of each Group in Both Sexes

	U. S. census statistics		Hospital statistics	
	Female	Male	Female	Male
Stomach and liver.	50.2%	49.8%	35. %	64.9%
Intestines	57.3	42.7	50.5	49.5
Mouth	19.9	80.1	10.8	89.2
Skin.....	34.9	65.1	33.3	66.7
Breasts	99.2	.8	79.6	20.4
Sexual organs.....		not given	89.5	10.5
Miscellaneous	53.9	46.1	39.6	60.4

We see from the above tables that the female sex leads in number of cancers of breast and sexual organs, while the male sex leads in number of cancers of mouth and skin. Cancer of the intestines are about equally distributed between both sexes, and in cancer of the stomach both sexes are about equal in number according to the United States Census statistics, but the male

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leads considerably in the hospital statistics. The reason for it may be found in the fact t at cancer of this group is in the female frequently secondary to primary cancer of her sexual organs and breast, and, while the Bureau of Census credits the deaths of the secondary cancers to the stomach and liver groups, the hospital records show only the primary seats of these cancers.

TABLE 10.

Comparison of the Hospital and Census Percentages of the Groups.

	Census statistics	Hospital statistics
Stomach and liver	30%	6%
Intestines	10	5
Mouth	1	1
Skin	2	2
Breasts	13	30
Sexual organs	24	51
Miscellaneous	20	5

We see that according to the statistics of the Bureau of Census, women die most commonly from cancer of the stomach and liver (30 per cent.), then from cancer of the sexual organs (24 per cent.), then from cancer of the breasts (13 per cent.), then intestines (10 per cent.), skin (2 per cent.), and mouth (1 per cent.); while according to the hospital cancer statistics women apply to hospitals most commonly with cancer of the sexual organs (51 per cent.), then with cancer of the breasts (30 per cent.), then with cancer of the stomach and liver (6 per cent.), intestines (5 per cent.), skin (2 per cent.), and mouth (1 per cent.).

OPERATIVE STATISTICS OF CANCER.

The point that interests us as much as any other in connection with cancer is the statistics touching on questions of early diagnosis. The only source of information in this connection is the annual hospital reports, and the only way we can judge about it is by the relative proportion of radical operations to the palliative ones.

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TABLE 11.

Number of Radical and Palliative Operations in the Cancer Groups.

	Radical			Palliative		
	Total	Number with results given	Deaths	Total	Number with results given	Deaths
Stomach and liver	173	140	39	339	246	56
Intestine	214	177	53	260	94	45
Mouth	473	358	19	73	42	1
Skin	401	345	14	73	36	0
Breasts	703	392	24	26	6	0
Sexual organs	789	611	64	170	121	4
Miscellaneous	491	371	37	321	247	55
	3244			1262		

This table shows us a total of 5,506 operations for cancer of which 1,265 or 21 per cent. are palliative. In other words, while the only possible cure for cancer is a radical operation, 21 per cent. of the hospital cancer cases that come for treatment, are already too late to be operated upon radically. The palliative operations with an immediate mortality of 20.3 per cent. with an unavoidable fatal termination in the near future is substituted for the radical operation with the immediate mortality of 10.4 per cent. and fair chance for recovery. Let us consider this point separately for each group.

CANCER OF THE FEMALE SEXUAL ORGANS.

TABLE 12.

Number of Radical and Palliative Operations.

	Total number	Radical operations			Palliative operations		
		Total	Results given	Died	Total	Results given	Died
Uterus	2479	706	557	60	123	89	2
Ovaries	125	35	20	3	25	17	1
Vulva	61	22	16	1	5	3	0
Vagina	54	19	11	0	13	9	0
Clitoris	13	5	5	0	2	2	1
Unclassified	21	2	2	0	2	1	0

From this table we construct the following:

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TABLE 13.

Percentage of Radical and Palliative Operations.

	Per cent. total cancer of the group	Per cent. radical operations	Per cent. mortality of radical operations	Per cent. palliative operations	Per cent. mortality
Uterus.....	90	83.9	8.5	14.9	2.2
Ovaries.....	4.5	58.3	8.6	41.7	4.0
Vulva.....	2.2	81.5	4.5	18.5	0
Vagina.....	2.	59.4	0	40.6	0
Clitoris.....	0.5	71.4	0	28.6	50.
Unclassified...	0.7	66.7	0	33.3	0

Cancer of the female sexual organs is the largest group in hospital cancer statistics, constituting 51 per cent. of all hospital cancer cases. If we bear in mind that the mortality statistics of the U. S. census gives this group only 24 per cent., we can easily presume that this group of cancer is generally diagnosed by the profession and that it takes good advantage of hospital treatment. At the same time we notice, by table 13, that at the hospitals 82.9 per cent. of uterine cancer, 58.3 per cent. of ovarian cancer, 81.5 per cent. of vulvar cancer, 59.4 per cent. of vaginal cancer, and 71.4 per cent. of cancer of clitoris are operated upon radically, or, taking the total number of cancer of the female sexual organs, 82.3 per cent. undergo radical operations. These figures indicate that, even in this group, in spite of the general use made of the hospital by it, 17.7 per cent. are being admitted to the hospital in an already hopeless condition.

CANCER OF STOMACH AND LIVER.

TABLE 14.

Number of Radical and Palliative Operations.

	Total number	Radical operations			Palliative operations		
		Total	Results given	Died	Total	Results given	Died
Stomach.....	1629	173	140	39	275	198	41
Liver.....	409	0	0	0	64	48	15

From this table we may construct the following table:

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TABLE 15.

Percentage of Radical and Palliative Operations.

	Per cent. total cancer of the group	Per cent. radical operations	Per cent. mortality of radical operations	Per cent. palliative operations	Per cent. mortality
Stomach	80	38.6	27.9	61.4	19.9
Liver.....	20	0	....	100	23.3

This group constitutes 6 per cent. of female hospital cancer cases while the census gives it 30 per cent. We can see from this that a large number of this group never come to the hospital for operations, either because they remain undiagnosticated or are diagnosticated too late to get any benefit from hospital treatment. Of those admitted to the hospitals only 33.5 per cent. were operated upon radically, which means 58.8 per cent. were diagnosticated too late to be benefited by the radical operation. But the radical operation itself with its present 28 per cent. of immediate mortality is not very encouraging treatment for this unfortunate group of cancer. It may be interesting here to cite the statistical figures of stomach and liver separately.

In this group the stomach cases constitute 80 per cent. and liver 20 per cent. The liver cancer cases are all palliatively treated with the immediate morta ity of 23.3 per cent. Of the stomach cases, 38 6 per cent. are treated radically with an immediate mortality of 28 per cent., and 1.4 per cent. are treated palliatively with an immediate mortality of 15 per cent. The poor status of the present treatment of cancer of the stomach is here well demonstrated; 61.4 per cent. of the stomach cases are being sent to the hospital too late for radical surgery, and the remaining 38.6 per cent. operated on radically have a discouraging immediate mortality of 28 per cent.

CANCER OF BREAST.

TABLE 16.

Number of Radical and Palliative Operations.

Total number	Radical operations				Palliative operations		
	Total	Results given	Cured	Died	Total	Results given	Died
2702	703	392	130	24	26	6	0

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Percentages of Radical and Palliative Operations.

Per cent. radical operations	Per cent. cured	Per cent. mortality	Per cent. palliative operations	Per cent. mortality
96.4	33.1	6.1	3.6	0

This group of cancer constitutes 30 per cent. of the total number of cancer cases admitted to the hospital, a higher percentage than the one given in the census (13 per cent.) indicating that hospital treatment is largely resorted to in this group. The percentage of palliative operations is only 3.6, which shows that the cases with cancer of the breast are sent to the hospitals in time to get the radical operation, but the fact that only 33 per cent. are reported as cured from the operations would suggest the idea that of the 94 per cent. surviving the operations at least 61 per cent. come too late for permanent cure.

CANCER OF THE INTESTINES.

TABLE 17.

Number of Radical and Palliative Operations.

	Total	Radical operations			Palliative operations		
		Total	Results given	Died	Total	Results given	Died
Duodenum	287	117	86	12	140	111	21
Cecum	44	13	13	6	9	7	4
Appendix	20	9	9	0	1	...	..
Colon	94	9	8	6	35	27	6
Sigmoid	111	15	14	9	20	17	5
Rectum	336	22	..	1	1	1	..
Unclassified intestine	221	49	45	19	54	31	9

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TABLE 18.

Percentage of Radical and Palliative Operations.

	Per cent. total cancer of group	Radical operations		Palliative operations	
		Per cent. total number of operations	Per cent. mortality	Per cent. total number of operations	Per cent mortality
Duodenum	26	45.5	13.9	54.5	18.9
Cecum	4	59.0	46.1	41	59.1
Appendix	2	90	0	10	0
Colon	8	20.5	75	79.5	22.2
Sigmoid	10	42.8	64.3	57.2	29.4
Rectum	30	95.6	4.5	4.4	0
Unclassified	20	47.5	42.2	52.5	29

The intestinal group of cancer in hospital statistics gives the female 5 per cent. of the total female cancer cases while the census credits the female sex with 10 per cent. This difference suggests the idea that a large number of cancer of the intestines is either not diagnosticated before death or is diagnosticated too late to take advantage of surgical treatment at the hospitals. At the same time we notice by table No. 11 that 55.9 per cent. are operated upon palliatively, confirming still more forcibly the idea that the diagnosis in cancer of the bowels is usually made too late. In this connection it may be interesting to notice the percentage of radical operations on the different parts of intestines. Cancer of the rectum, with its early development of symptoms, easy access for diagnosis and operative procedures, leads with 95.6 per cent, of radical operations, cancer of the appendix, with its symptoms suggestive of appendicitis, easy access and simplicity of operative treatment, and readiness of patients to be operated on for appendicial disease, follows with 90 per cent. The cancer of cecum, also suggesting by its early symptoms appendiceal trouble, has to its credit 59 per cent. of radical operations; cancer of the duodenum and sigmoid with their comparatively early development of symptoms, and proximity of the first to the stomach and the second to the rectum, give, respectively, 45.5 per cent. and 42.8 per cent. of radical operations. The colon, least accessible and latest in development of symptoms, has only 20 per cent. of radical operations.

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CANCER OF THE SKIN.

TABLE 19.

Number of Radical and Palliative Operations.

	Total	Radical operations			Palliative operations		
		Total	Results given	Died	Total	Results given	Died
Skin unclassified	350	75	55	8	20	13	0
Skin head	40	12	11	1	0	..	..
Skin neck	135	69	62	5	15	8	0
Skin face	303	136	115	0	22	9	0
Skin nose	119	19	25	0	5	3	0
Skin eye	71	33	33	0	4	1	0
Skin ear	24	15	12	0	0	..	..
Skin extremities	131	42	32	0	7	2	0

The above table reduced to percentages gives the following:

TABLE 20.

Percentage of Radical and Palliative Operations.

	Per cent. of total cancer of group	Per cent. of radical operations	Per cent. mortality	Per cent. palliative operations	Per cent. mortality
Skin unclassified	30	80	14.4	20	0
Skin head	3	100	9	0	0
Skin neck	11	82	8	18	0
Skin face	27	86	0	14	0
Skin nose	10	79	0	21	0
Skin eye	6	89	0	11	0
Skin ear	2	100	0	0	0
Skin extremities	11	89	0	11	0

The skin group of cancer constitutes 2 per cent. of hospital cases (table 10). The census gives it the same per cent. The hospital treatment is therefore general. As far as taking advantage of radical operations is concerned, this group shows up very favorably according to the tables 19 and 20. The lowest percentage of radical operations is credited to cancer of nose and this is quite high (79 per cent.).

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CANCER OF MOUTH.

TABLE 21.

Number of Radical and Palliative Operations.

	Total	Radical operations			Palliative operations		
		Total	Results given	Died	Total	Results given	Died
Lips	398	298	222	7	10		
Cheek	58	23	5	0	9	4	0
Tongue	204	68	56	10	27	14	0
Tonsils	13	12	8	2	0		
Unclassified	153	72	67	0	27	24	1

Reduced to percentage we get the following table:

TABLE 22.

Percentage of Radical and Palliative Operations.

	Per cent. total cancer of group	Radical operations		Palliative operations	
		Per cent. total number of operations	Per cent. mortality	Per cent. total number of operations	Per cent. mortality
Lips	48	96.7	3.1	3.3	
Cheek	7	71.8	0	28.2	0
Tongue	25	71.5	18	28.5	0
Tonsils	2	100	16.6		
Unclassified	18	72.7	0	27.3	4.1

The mouth group of cancer constitutes 1 per cent. of all hospital cancer cases; the census gives it the same percentage which indicates that the group of cancer takes good advantage of hospital treatment. At the same time we notice by Table 22 that 96.6 per cent. or 6 in 7 are operated upon radically. The most common seat of cancer of mouth (48 per cent.) is the lips, and of the total operations performed for cancer of lips 96.7 per cent. is radical. Cancer of the tongue, which constitutes 25 per cent. of total number of cancer of mouth, is credited with 71.5 per cent. of radical operations, cancer of the cheek (7 per cent. of total mouth cancer) has 71.8 per cent. of radical operations, while all the cancers of the tonsils (2 per cent. of the total mouth cancer) are reported as radically operated upon (Table 22).

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We may then say that the diagnosis of cancer in this group, judging by the rather high percentage of radical operations, is satisfactorily early.

MISCELLANEOUS GROUP OF CANCER.

Under this heading we shall select only the organs in which cancer is more or less commonly met with. Placing them in order of frequency we get the following table:

TABLE 23.

Number of Radical and Palliative Operations.

	Total number of cancer	Radical operations			Palliative operations		
		Total	Results given	Mortality	Total	Results given	Mortality
Esophagus	234	4	2	0	49	38	9
Bladder	214	10	6	0	52	47	10
Bones and joints	154	86	75	7	21	10	1
Pancreas	133	..	..	..	35	29	14
Gall-bladder	90	11	10	3	39	32	5
Larynx	79	11	10	4	10	8	2
Kidney	51	9	7	3	9	8	3
Thyroid	38	9	6	1	5	4	1

From the above table we construct the following:

TABLE 24.

Percentage of Radical Operations.

	Per cent. total cancer of this group	Per cent. radical operations
Esophagus	24	7.5
Bladder	22	16
Bones and joints	15	80
Pancreas	13	0
Gall-bladder	9	22
Larynx	8	52
Kidney	5	50
Thyroid	4	64

We see in this last group, as in all the others, that the more accessible an organ, the more definite the characteristic symptoms and the easier the radical operation, the earlier is the patient operated upon and the higher is the percentage of the radical operation.

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CANCER IN THE COLORED RACE.

An interesting point for investigation is statistics of cancer of the colored race. Unfortunately, the statistics collected by the Bureau of Census are meager. Only in the partial report for 1908 (the last obtainable) is an attempt made to give us information on this question and then without any sex classifications. This information is based on statistics collected in the cities of Baltimore, Washington, Louisville, New Orleans, Kansas City, Memphis, and rural districts of Maryland. According to this statistics the mortality from cancer per 100,000 population of the colored race is 50.2, while that in the white race is 71.7. This lower death rate of cancer in the colored race, a difference of 21.5 per 100,000 population, can in our opinion be explained not so much by the greater resistance of the race to cancer as by the fact that their mortality in the precancerous age is much higher than that in the white race. Studying the general mortality of the colored race for 1906 and 1907, we are struck with the fact that its highest mortality, excepting infancy, is reached at the age between twenty-five and thirty, while that of the white race between sixty-five and seventy; in other words, the colored race die proportionately in larger numbers in the precancerous age than the white race. We can make this point clearer by the following statistical observation for 1906 and 1907.

Deaths from all causes and all ages { In the white race 1,401,103. / In the colored race 89,099.

Deaths from all causes prior to age 35 { In the white 601,498, or 42.9 per cent. of total number. / In the colored 51,209, or 57.4 per cent. of total number.

In other words, proportionately 14.5 per cent. less of the colored race reach the cancer age than does the white race. It may be of interest in this connection to state that the higher mortality of the precancerous age of the colored is chiefly due to the prevalence of tuberculosis. Thus in the above cited territory we find 457.4 deaths from tubercle bacillus to 100,000 of colored population, while only 179 to 100,000 of white population, the death rate of the colored from tuberculosis being two and one-half times as high as that of the white. If to this higher mortality in the precancerous age we add the probability of more frequent mistakes in diagnosis among the colored people than

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the white, we certainly can be justified in doubting the greater resistance to cancer in the colored race than that in the white race.

THE FREQUENCY OF CANCER IN DIFFERENT STATES AND COUNTRIES.

There seems to be a difference in death rate from cancer in the different states. How much value can be attributed to purely territorial influences on the resistance of its population to cancer is difficult to determine, but, in, our judgment, it cannot be great. Studying the death rates from cancer statistics in the states of the registration area for the years 1900 to 1908 without distinction as to sex, we find the death rate in some of them strikingly different in the different years.

Thus per 10,000 it ranges in

New York, between 66.7 and 89.9, a difference of 23.2.

Vermont, between 69.1 and 99, a difference of 29.9.

Maine, between 74.6 and 101.3, a difference of 26.7.

New Hampshire, between 71.9 and 95.8, a difference of 23.9.

Pennsylvania, between 41.5 and 62.8, a difference of 21.3.

Massachusetts, between 74.6 and 93.5, a difference of 18.9.

Such striking differences could not be possible if purely territorial peculiarities were a great factor in the death rate of cancer. But how can we account for such differences as, for example, 38.8 per 100,000 in South Dakota, and 101.3 in Maine? If there are no inherent peculiarities to account for the difference, how can this difference be explained? It seems to us that there are many factors independent of the territorial peculiarities that can account for it. The industries attracting large numbers of employees in their precancerous age, the economical and intellectual standard of population with its influence on mortality, especially on mortality in the precancerous age, the degree of proficiency of the medical profession and that of its hospitals, the accuracy of the Census Bureau health statistics, all these must constitute great factors influencing the reports on mortality of cancer in the different states. Information on all these points would be of great value in determining the question of territorial influence on cancer, but such information is not at our disposal.

These same considerations may with equal force apply to the difference in the death rate from cancer in the different countries.

CONCLUSIONS.

Hospital statistics, if carefully and properly compounded, can be utilized to great advantage by the profession in many ways.

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The modern hospital organization and facilities, the gradual increase of the number of hospitals all over the country, the more general use of the hospitals by the sick, the greater readiness by the profession and patients to adopt surgical measures for surgical diseases—all this makes the hospital the most valuable source of statistical medical information. But to get accurate information, not only must each hospital have a careful conscientious statistician, but the visiting members of the hospital staff must see that their diagnoses are carefully reported in the hospital records. The practice of leaving the collection of the statistics to the inexperienced internes should be abandoned, especially in large institutions, and a paid responsible registrar put in charge of the hospital records. Of the 395 hospitals we heard from, 115 or 29 per cent. issue no reports, sixty-one or 15 per cent. issue reports but with no medical statistics, 165 or 42 per cent. issue reports with incomplete medical statistics, and only 14 per cent. issue reports with complete medical statistics. Quite a number of our leading hospitals, generous in their treatment of patients, and sparing nothing to advance their medical work, neglect to give the profession their statistics in their otherwise complete and elaborate annual reports. If we could have all the hospital reports as carefully classified as in the Bellevue and allied hospitals of New York, Boston City Hospital, and the Massachusetts General of Boston, if we could have all the operative hospital statistics as clearly and fully reported as in the Pennsylvania Hospital of Philadelphia and the Roosevelt of New York, the medical profession could utilize the hospital reports in its statistical studies to a much greater degree than it can at present.

DISCUSSION ON THE PAPERS OF DRS. CHASE AND SANES.

DR. WILLIAM H. HUMISTON, CLEVELAND.—Mr. President: the importance of the paper, such as we have listened to from Dr. Chase, who has had a wide experience in the treatment of cancer, is invaluable. It is invaluable not only to us, but to those general practitioners who will profit by the reading of the transactions of this association. The German physicians have, through a commission I believe, put out information, which is to be distributed to the laity on the early symptoms and diagnosis of cancer, especially cancer of the uterus, and that will have, undoubtedly very soon, a very decided effect in bringing these cases early to the surgeon for radical operation. It is wonderful what the results have been, following the so-called radical operation that has been put forth by Wertheim, for the hereto-

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fore inoperable cases of cancer of the uterus. It was my pleasure to be with Wertheim several weeks in 1905, and I saw him operate upon numerous cases of the so-called inoperable carcinoma of the uterus that had been referred to him by several surgeons of noted ability who felt that it was too late for operative measures to be of value. All but one of these cases was operated upon (and I saw anywhere from ten to twelve) under spinal anesthesia. The preparation of the field of operation was all made before the spinal anesthesia was induced, and the operator, with his skilled and trained assistants, not only removed the broad ligaments, but the glands from the upper part of the vagina and the cervix—removing glands as large as one's thumb from the iliac vessels and abdominal aorta; this together with the separation of the uterus and vagina from the rectum posteriorly, separation of the bladder low down anteriorly, and clamping off and taking away from one-third to one-half of the vagina, making a clean operation, such as an extensive breast operation would be, thus giving us better results. And his statistics of these so-called inoperable cases of carcinoma of the cervix and uterus are as favorable, if not more so, than those resulting from the older methods of earlier operation.

It has been my good fortune to have but five cases of this kind that I could induce to submit to operation. Four of them are still living in which I made this wide dissection. It is interesting from the standpoint of age. One was thirty years of age, a married woman, nulliparous, who had been treated for nearly a year for so-called ulceration of the cervix by a general practitioner. She came under my service at the hospital and I recognized on examination and inspection that she had carcinoma of the cervix with a fixed uterus, and the pelvis filled with inflammatory masses on either side of the uterus. To confirm my suspicion, I made a V-shaped section of the cervix and submitted the specimen to a pathologist who reported it was carcinoma of the cervix. I made the combined vaginoabdominal operation, and I show the specimen here of carcinoma of the cervix with double tuboovarian abscesses. This patient did very well for several months, then there was a recurrence. She had carcinoma involving the lower part of the abdomen reaching as high as the umbilicus. The other case was fifty-five years of age, presented no other symptoms than irregular bleeding. Her color was good. She had not lost weight. She had a uterus seemingly the size of a fetal head, movable, and the only symptom complained of was irregular bleeding. I rather thought we had to deal with a submucous myoma of the uterus and advised operation. I made supravaginal amputation, and I have here a splendid specimen which I present of sarcoma of the uterus. She was operated on in 1907 and is living to-day.

In another case in which I desired to do a Wertheim operation the woman was fifty-two years of age in whom the cervix was involved. She had a history throughout the child-bearing period

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of repeated attacks of peritonitis. She had a fixed uterus. A radical operation was declined, and to relieve her I made an extensive curetment, removing nearly all the cervix, and then applied the Paquelin cautery very thoroughly. This was one year ago, and to my surprise she had complete relief following the operation, and as yet no indication of any return of the carcinoma of the cervix. The diagnosis was made from sections, not only by the pathologist at St. Vincent's Charity Hospital, but was confirmed by the pathologist of Lakeside Hospital. This bears out the contention of Dr. Chase, that in a great many cases by thorough cureting away the cervix and deep cauterization with the Paquelin cautery, we can at least temporarily afford these patients great relief. It has been a year since the operation was done in this case, and no recurrence has taken place, and the woman is in perfect health so far as can be determined. I shall follow this patient carefully and keep a record of her until she passes away, and hope to have an autopsy and then make a complete report of the case.

DR. RALPH WALDO, New York.—I have been very much interested in these papers. Every civilized nation has one or more commissions, and they have made no advance up to date in the etiology of cancer. They are collecting a mass of statistics, and we hope sometime that they will learn something more positive. There has been a decided advance in the operative work for carcinoma, and especially carcinoma of the uterus. I believe to-day that most any one who is competent to pass judgment will advise a radical operation on any woman forty-five or fifty years of age, who has a persistent hemorrhage from her uterus, unless there is a polypus or something else that can be thoroughly demonstrated as the cause of the hemorrhage hysterectomy should be performed. You will occasionally take out a uterus which is not the seat of carcinoma, but you take out many more that are the seat of incipient carcinoma.

Now, the doctor has spoken about the methods of operating. I admit with him that there is occasionally a case where the abdominal operation is necessary. I had one last winter in a nulliparous woman who had persistent hemorrhage. On making the ordinary vaginal examination the cervix was found to fill nearly the whole pelvis; the vagina was small, and we operated, removing this offending organ from above. On the other hand, I will not admit with the doctor that in ordinary cases requiring operation that the vaginal route is not the preferable one. I consider it decidedly preferable. When I say the vaginal route I do not mean the ordinary every-day vaginal hysterectomy. I mean opening the anterior vaginal wall up to within one-half or three-quarters of an inch of the meatus, pushing off the bladder and exposing the entire pelvis, including the tubes and ovaries as well, if not better than through the average abdominal incision. I speak of cases in which there is a large vagina. You can take out as much or as little as

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you see fit. You can take out a large part of the broad ligaments. If the uterus is large, you can bisect it, and you can spend a considerable amount of time in removing the glands.

DR. HUMISTON.—How would you remove infected glands over the infected iliac vessels?

DR. WALDO.—I am not speaking of the class of cases that are inoperable, but of those where the uterus is movable. When the glands are involved about the iliac vessels, an operation is useless, because the disease will return. Furthermore, when the uterus is immovable, it does not mean that the deposits are of necessity cancerous. There are inflammatory deposits, and adhesions which are not of necessity cancerous, but this you can determine only by the aid of the microscope. So all cases of fixed uteri are not hopeless. My friend, the late Dr. Pryor, performed two very extensive operations. One of his patients fell into my hands on account of the return of the disease. I reported this fact to him, and he kept track of the other case, and found that the disease returned notwithstanding a very extensive operation had been made. In this operation he took away the uterus, the entire vagina, the entire perineal body, and the rectum and broad ligament. He wanted to see if he could not perform an operation sufficiently radical and deep to cure this malady. In both of the cases the disease returned.

I suppose any one could talk a week on this subject, but I think I have expressed my opinion sufficiently clearly.

DR. MAURICE I. ROSENTHAL, Fort Wayne.—What are the early symptoms of cancer of the uterus? Hemorrhage and discharge? Hemorrhage and bad smelling discharge are evidences of breaking down tissues hence are late evidences of cancer. When we get a case of cancer of the uterus in its early history it is purely by accident. The only saving clause we have is the fact that some carcinomata are less malignant than others or some are more malignant than others. When we are dealing with carcinoma of the fundus of the uterus we are ordinarily dealing with a carcinoma that is less malignant. A destructive operation in the vagina in such a case is altogether uncalled for. When we are dealing with carcinoma of the portio vaginalis we are again dealing with that form of carcinoma which, like epithelioma about the lip, is not so malignant. In such cases the cautery operation, the ordinary hysterectomy done with cautery, will give you as good results as any other operation. When, however, we are dealing with carcinoma of the portionis uteri, a carcinoma which begins in the cervical endometrium higher up, we are dealing with the most seriously malignant carcinomata where no oridnary operation can do any good. In these cases a broad deep operation may be of some avail. I have done the Wertheim operation. I reported six or seven cases in the American Journal of Surgery some years ago, and with good results for this class of cases; but I do not believe it is necessary to subject every woman to a radical Wertheim operation, but to the less

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severe operations for selected cases of cancer. There is one point I am conivnced of, and that is that we can disseminate cancer by cutting into it and transplanting that cancer into the neighboring tissues. When we cut through a cancerous uterus, this is just exactly what we do, and it is better to leave such a uterus and subject the woman to the palliative measures which have been so ably presented this morning.

DR. J. HENRY CARSTENS, Detroit.—I agree with what Dr. Rosenthal and with what Dr. Waldo have said with reference to these cases of cancer, and the question very largely resolves itself into early diagnosis. When the lymphatics are involved high up and beneath the diaphragm and along side of the kidneys, it is very doubtful whether all of the cancerous tissue can be removed by such an extensive operation as is recommended by Wertheim, and when a woman is so far gone as that I think it is better to let the case alone and trust to the *vis medicatrix naturæ*. Besides the varying degrees of malignancy to which reference has been made, there are differences in the ages of the patient which we must consider. The older the patient, usually the less malignant the disease; the slower the growth, the more likely are you to afford relief by operation. I operated on a woman, twenty-three years of age, four years ago for hemorrhage. She had simply a benign adenoma of the uterus. I thoroughly cureted it. She was well for a while, and started flowing again, and kept on flowing for four years. The family physician gave her medicines of of all kinds, but finally she came back to me. I cureted her uterus again, examined the scrapings from the curet, and found it was adenocarcinoma, and immediately had her taken to the hospital, and shortly afterward removed the uterus with the cautery. The point I wish to make and to emphasize is that we must make an early diagnosis in these cases and operate on them as early as possible, and you can make the diagnosis early if you are continually on the lookout for cancer. If you are conscientious and microscopically examine the scrapings from the curet which you remove, and the little pieces of the lacerated cervix, if you do a trachelorrhaphy, you will find a lot of these cases early. Let us consider what they are doing in Germany in this question. Winter advocated that a long time ago—namely, to educate the community in regard to the early symptoms of cancer. I advocated educating the laity a long time ago. The statement which is frequently made, that a woman when she reaches the menopause must flow, is absurd, and to undo that impression which has been handed down for ages is extremely difficult. I have written articles on "What women ought to know about cancer of the uterus," and for several years I have agitated this question, and finally induced our state board of health to issue a cancer circular on how cancer can be cured when an early diagnosis is made and an operation performed promptly, and our state board of health has distributed these circulars to the different county medical societies, and the members of those societies carry these

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circulars in their pockets and distribute them to the people, and if this is done in other states we will gradually get the people to understand what the symptoms of cancer are. They will call a doctor early and they will insist on the doctor examining them. That is one great thing. There are a lot of doctors who do not examine these women, and when they consult them with evident cancer, they say to them, "I will give you a wash. Use that for a month or two, and if you are not better, come back to me," this is bad practice. These patients finally drift into the hands of some one who recognizes cancer when it is too late. These women ought to be examined, especially if they flow. If you make an early diagnosis, and follow it by a prompt operation, many patients that are now doomed could have their lives saved.

DR. THOMAS B. NOBLE, Indianapolis.—I did not get here in time to hear the papers, but have gathered some interesting points from the drift of the discussion. I do not know that I can add anything of great value to this subject, yet I have some ideas that are to me worth while. I look upon cancer of the cervix or of the uterus as an analogue to carcinoma of the breast. It should be so considered and diagnosticated, and decidedly so as regards the treatment. The time was when we removed a growth from the breast only. Ultimately the breast was removed, then the contiguous lymph nodes, and now everything is taken away. I believe that such a procedure is coming relative to the treatment of carcinoma of the uterus. I do not know what other men are able to do, but I know I am unable to do a complete and thorough operation by the vaginal route. We know enough only to know that the farther we go from the infected area the more nearly we come toward the eradication of the disease. So far as I am aware, that is all we definitely know. That is what we do with malignant disease anywhere, namely, we aim to take away as much tissue as possible and by so doing hope to remove all of the infected area. We must do such a thing when it comes to operating on carcinoma of the uterus. We must have the field of operation thoroughly exposed, so that there will be before our fingers and our eyes all tissues to be attacked. But I cannot do this by the vaginal route. I know carcinomas have been removed by the vaginal route for years, and I know that carcinomas are recurring repeatedly. We are surprised oftentimes to find that carcinomas which we thought would recur do not. Those we thought would not, have recurred. This is because, as has been said, of the varying malignancy of the disease. No man can measure that in my judgment before operation. We cannot foretell what any one individual case is going to do. You may, gentlemen, but I cannot. All I know is to lay the field wide open, and that means the abdominal route to me. It means a wide, free abdominal incision, with the patient in the Trendelenburg position, the bladder dissected off of the uterus in front, and suspended by a gauze sling which is carried between the bladder and the uterus

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and tied in front, after the ureters have been dissected out, well exposed, and giving you free access to everything that is operable.

DR. JOSEPH PRICE, Philadelphia.—A discussion of this painful and distressing affection is always interesting, and just here I want to make one or two criticisms. One is the correction of statistics with reference to cancer. We will find that out cancer commissions paid by the state are commonly political bodies, just what you find at Washington, and in connection with our new hospitals. If they would only organize general research laboratories, we would make more progress along these lines. In this state (New York) you have used an immense amount of money in the research department, and it has only determined that fish are now having malignant disease. That is really the only discovery they have made. Cancer is spreading. We are discussing a loathsome and distressing affliction. Many years ago Oliver Wendell Holmes invited Sims to lecture to his anatomical class, and Sims took for his subject the curet and cautery and uterine cancer. The great Sims recognized the fact that the curet and cautery gave these women with cancer a period of one or two or more years of absence of an offensive discharge and copious hemorrhages, and freedom from pain. I presume many of you have been in Europe this summer and enjoyed your vacations. That is about what these patients get out of the curet and cautery—namely, removal of the involved structures and prolonging their lives for one or two years, and putting the sufferer and family again into a comfortable and uncontaminated atmosphere. If you take the neglected cases of cancer of the uterus, the delayed and hopless cases, and subject them to the curet and cautery, if you cook the parts thoroughly, you will put those women in a new atmosphere. The sisters, the daughters, the husbands, and others, have appealed for early operation because they are living in a contaminated atmosphere, and by the early use of the curet and cautery you rid the house of a contaminated atmosphere for at least two years.

What happens with extirpation of the uterus? You have recurrence of the disease with involvement of bowel and bladder, and the recurrences come as quickly as they do from the use of the curet and cautery, when well done.

There are a number of interesting points we might discuss in connection with this subject. For instance, plastic work in this country at the present time is very much neglected. Surgeons are so much interested in hanging up the jejunum that they have forgotten about the accidents incident to parturition, and the great work done at the Woman's Hospital in the city of New York in restoring women to normal, physiological child-bearing conditions, restoring them from accidents incident to parturition which were responsible for much of our race suicide. Let us take the work of Emmet. I venture to say that there is not 1 per cent. of this body of men prepared to report malig-

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nancy following the operation which Emmet devised for the repair of the injuries of the cervix. I have done thousands of these operations for deep bilateral lacerations, with extensive erosion, congestive hypertrophies, and the cervix loaded with Nabothian cysts, and not a single one of those cases in thirty-five years has been followed by malignancy, and, at the same time, I put a new bottom in the woman. What happens in Germany? The German and French operators took precisely that group of cases with angry erosions, bleeding irregularly, and with other symptoms of malignancy, and extirpated in a radical manner, with the result that their statistics were very favorable. We have closed the cervix and done good plastic work, while they have extirpated. There is an interval of one-quarter of a century between the operation and the recurrence of the disease. They were practising race suicide and we were not. These women should have gone on bearing children. They were robbing these women of just what a woman prizes most—namely, maternity, and we were not.

Cancer is cancer the world over, and much has been said with reference to the progress made in mammary cancer. A number of surgeons adopted the removal of the pectoral muscles, and malignancy does not occur in 1 per cent. of the cases in the pectoral muscle. I have removed thousands of breasts, and I have never known it to recur in the pectoral muscle. I have known the disease to recur in 5 per cent. of the cases in the transverse colon after removing both breasts. I do not think we should remove the pectoral muscles because the disease does not occur there. What is the use of disabling a woman from doing many things with her arms?

In regard to the relative merits of extirpation, I will say that the vaginal operation is a simple one. It is followed by a small or *nil* mortality, and if the operations are done early and after the fashion of Pryor, who did a radical procedure, the prospects of success are much brighter. It is unfortunate that Pryor did not say more about his radical method. He did as extensive an operation as one could make by the suprapubic route. His operation for puerperal infection, saving thirty-four patients out of thirty-five, demonstrated beautifully what thorough operative interference and drainage are worth. He put a cushion of iodoform gauze beneath the infected viscera, and the patients could not help but get well. If there is anything in drainage, Pryor demonstrated how beautifully drainage worked, and the whole profession questioned his results in cases of puerperal infection. It would be a good practice in a great number of cases of general peritonitis as compared with superficial practise at present of putting a little cigarette drain in a dirty cavity. But let me repeat, the vaginal operation is simple. It is all nice to talk about veterans in gynecology doing radical and complete suprapubic work, or by the conjoined methods,

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but the boys cannot do that. That requires experience and judgment, and judgment comes from experience. As I have said, I look upon the vaginal operation as one of the simplest operations in surgery. You can remove pathology from the inside or outside. For small fibroids and incipient malignant disease we simply make half-moon incisions, taking away as much of the vagina as possible, making a big mouth, and opening the retroperitoneal sac, using the Sims position, and passing the finger into the vesicouterine pouch, opening again, and applying forceps as far from the uterus as possible. These patients have intervals of relief for four, six, even ten and twenty years. I have patients in Petersburg, Richmond, and Danville, Virginia, and in Spartansburg, South Carolina, from whom I have removed uteri a quarter of a century ago, and in other instances ten years ago, and I am satisfied that in some of those cases I did the German operation. Dr. Horner, of the University of Pennsylvania, used to say that if you remove a tumor and it never returns, you have made an error in diagnosis.

DR. FRANCIS REDER, Saint Louis.—In regard to the question of cancer, so far as operative measures are concerned, I think the whole matter resolves itself into early diagnosis, skilled operative measures, and the education of the patient. The essayist laid very little stress upon such teachings. I regard it as an absolute necessity that clearer and a better knowledge of the early signs of malignancy should be disseminated among the laity, so that a timely awakening may stimulate them to promptly seek aid. When Dr. Carstens told us that he had written a circular letter in regard to cancer, for distribution among patients, I could not help but wonder why such a procedure had not become more prevalent. Education of the patient is an essential feature in reducing the mortality from cancer of the uterus. At present I have eighteen cases that are considered operable. In approaching some of these patients with regard to operation, the first question asked was: "Will the operation stop my menses?" I have told them "yes." Thereupon they threw up both hands and said: "It is God's will, and I do not wish to have my menses stopped." Such people must be educated. We have a great many ignorant people who are willing to be educated on this point, and the best way to diffuse such knowledge among them is through the distribution of literature such as Dr. Carstens has spoken of. What Dr. Carstens has said has impressed me greatly, and I want to congratulate the doctor on the work he has been doing. In Germany, Dr. Winter has distributed literature on cancer, with the consent of the Government, and I understand by disseminating this knowledge among the common people has succeeded in lowering the death rate from uterine cancer to one-half.

DR. EDWARD J. ILL, Newark, N. J.—I simply want to speak of two matters. One is the hereditary possibilities of cancer, and the other is the dissemination of cancer by the transplantation of

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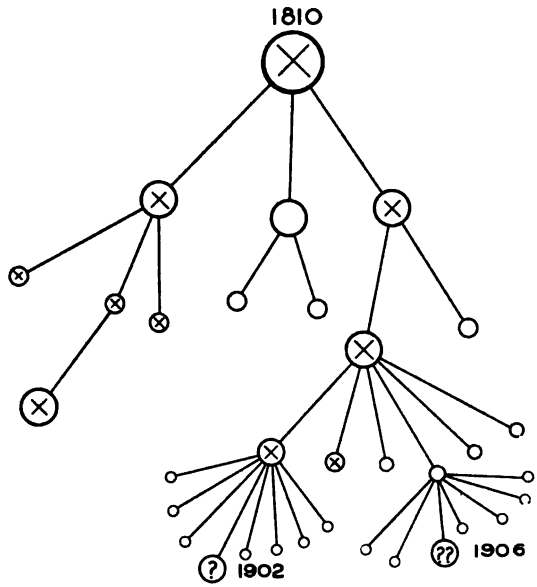
cancer particles from one part of the patient to another part of the same patient.

Dr. Waldo spoke of splitting up the vagina and getting out the mass as a whole. I do not think any one can open up so much cellular tissue and not spread the malignant disease all through. In fact, the safest operation, where there is any extent of cervical carcinoma, is to start from above, separate all adhesions, separate all attachments of the uterus to its surroundings, and then go from below and lift it right out, cut the vagina with the cautery, such as our friend Werder suggested years ago. There are probably fewer immediate infected cases from that source than from exposing a large amount of cellular tissue.

As to the hereditary transmission of cancer, I would like to show you on the blackboard the history of a family which extends over one hundred years. Such records are rare.



Dr. Chase (closing the discussion).—There are a good many points that have been touched upon by the gentlemen who have discussed the papers, which I would like to dwell upon at length, but it would be unjust to those who are to occupy time this afternoon for me to do so. There are two or three points, however, to which I want to give at least passing attention. I stated in my paper that there were two unsolved problems, and that when we came to the question of uterine cancer they are of great importance. The first is this: What is the effect of heat on the proliferation of cancer cells? Does the effect of heat alter the cancer cells or does it not? When you bring the cautery in contact with the diseased surfaces it heats the structures beyond those which are immediately killed by the heat. What influence has this heat

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on the cancer cells remaining outside the burned area? Does it destroy them or what is the result of the heat? The other question is that in those cases where we have devitalized and destroyed tissue, and, second, where we have devitalized tissue without destroying it, what happens? When we devitalize tissue absolutely, of course we get a breaking down of structure and finally we get a new granulating surface, which comes together. Suppose we cook thoroughly the tissues, they do not break down. What happens? I believe that when tissues are cooked—and they look somewhat like a piece of beef does when well done—apparently that tissue does not break down, but slow absorption takes place, and following that there is a deposit of healthy lymph and a reconstruction of the structures. It is impossible to demonstrate this to be a fact. In the observations I have made on the effect of the thermo cautery in inhibiting cell growth, and on the effect of heat in arresting this disease, I have been led to the conclusion that it has a very positive influence and possibly the reason that so much has been accomplished by the use of the thermocautery is the fact that with it you can go so deep in the removal of the malignant growth.

Dr. Waldo raised the question of hysterectomy but said with regard to it that very much depended on early diagnosis. When we find that cancer is present I subscribe to the positive belief that early hysterectomy is the best procedure.

Then another question comes up, and that is secondary hysterectomy. If the cervix is involved with squamous cell cancer and you do the high amputation, and the disease recurs again in the uterine tissue, the question arises what is the best thing to do? These are the cases in which I have done secondary hysterectomy, and I have done it by the abdominal operation. When you have previously amputated the cervix with the thermo cautery, and you try to find the landmarks to go at your work intelligently and remove the uterus from below, it is a difficult undertaking. In these cases it is therefore best to curet the remaining piece of the uterus, apply the cautery, so that your are sure you have destroyed every malignant spot, and then go ahead and do abdominal hysterectomy. I think the members of the medical profession are reluctant about operating for cancer; but if we can persuade them to operate as early as possible, we will do a great deal in demonstrating the value of operation in the treatment of cancer of the uterus. It is our duty to urge on all medical practitioners the necessity of making early and accurate diagnoses in suspected cases of cancer. The trouble is they do not suspect this disease until it has progressed so far that it is almost impossible to do anything radical. Another question of importance—and I asked the judgment and cooperation of this body if they deem it advisable—is to see what steps can be taken with regard to the proper dissemination of knowledge of this disease among womankind. They will then not only be prepared but willing to seek early advice.

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TREATMENT OF OBSTRUCTION OF BOWELS DUE TO MALIGNANT NEOPLASM.

BY
MAURICE I. ROSENTHAL, M. D.,
Surgeon to St. Joseph's Hospital,
Fort Wayne, Ind.

EARLY operation for cancer of the bowel is hardly to be hoped for with the present diagnostic possibilities. Those cases which come to us for relief from obstruction due to malignant growth of the bowel are necessarily far advanced. Nine of the eleven cases below tabulated were referred for hasty operation for the relief of obstruction, the patients showing the conditions which indicate rapidly approaching dissolution from this cause. Some of them with bloody serum in the abdomen and widely distended and mottled bowels. This is naturally the experience of all operators, and we are not surprised to find the mortality immediately from the obstruction itself and as to the progress of the disease to be very high. The insidious onset of the disease, its obscure symptomatology, the careless neglect of stool examination in persons of the cancer age who have been progressively losing in weight with pain and obscure bowel symptoms, as well as the neglect to simply introduce the finger into the rectum for combined examination, contribute to a greater mortality, both immediate and remote, than might obtain in these cases.

It is not my purpose to go into an exhaustive discussion of the diagnosis of cancer of the bowel in this short paper. I may say, however, that it should be a reproach to any surgeon to be surprised on opening an abdomen in finding a growth that would have been palpable by the examining finger in the rectum. In many cases, however, because of the urgency of the symptoms, no time is allowable for more careful examination, and in some, where complete examination has been made, the diagnosis of malignant obstruction is established only after opening the abdomen. Nor is the size of the growth when palpable nor the extent of the malignant involvement easily discernible by the palpating hand, very small growths frequently being sufficient, by the contractions which they produce, to obstruct the bowel. Frequently omental and bowel adhesions, inflammatory in

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character, or accumulation of fecal matter at the point of obstruction may cause a small malignant growth to simulate a large tumor.

In these cases, particularly, as little time as possible must be lost in locating the obstruction, for in no other class of cases is time and limited exposure of the bowel and handling thereof so esssential. I know of no more distressing condition, both to the delicacy of sense to the patient or to his comfort, than is the establishment of a preternatural anus for the relief of this condition. If the reestablishment of the bowel stream is to be accomplished, either by resection or enteroanastomosis without resection, no time must be lost in finding out the seat of the obstruction.

In obstruction, generally where physical examination does not give a clue to the location of the obstruction, we have followed this rule. If the vomiting has come on late in the history of the obstruction, it is probably located in the large bowel or in the lower part of the small bowel. If the vomiting has come on early, then the obstruction is probably higher up. In the latter case, a small median incision is made, the collapsed bowel found and followed to the distended, or the distended bowel followed back to its junction with the collapsed bowel. If the obstruction is low down, a small incision is quickly made over the cecum; if this is found to be distended with gas, then we know the obstruction to be in the large bowel. The hand or fingers quickly reaching over to the descending colon and sigmoid, not locating the trouble here, we quickly pass upward along the ascending colon to the hepatic flexure and along the transverse colon. Having located the obstruction, it is then attacked through the original opening or, if necessary, another suitable incision is made without delay. Where the obstruction has already produced marked tympany, even a large tumor may escape detection before the abdomen is opened. Frequently these growths are quite movable and easily delivered into the wound. In other cases because of short mesenteric attachment or because of malignant or inflammatory contraction, they can be reached only with great difficulty.

This is particularly true of fixed growths at or below the sigmoid. In these cases anastomosis can only be accomplished by such mechanical aid as the Murphy button. The bowel having been brought together by the button as a retaining agent, then the placing of supporting sutures is comparatively easy,

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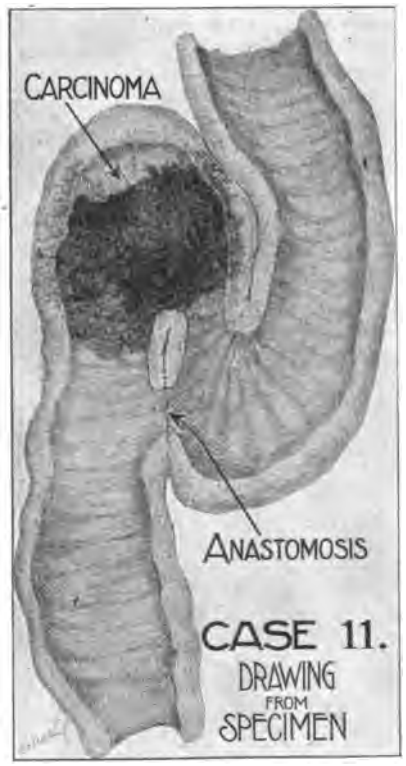
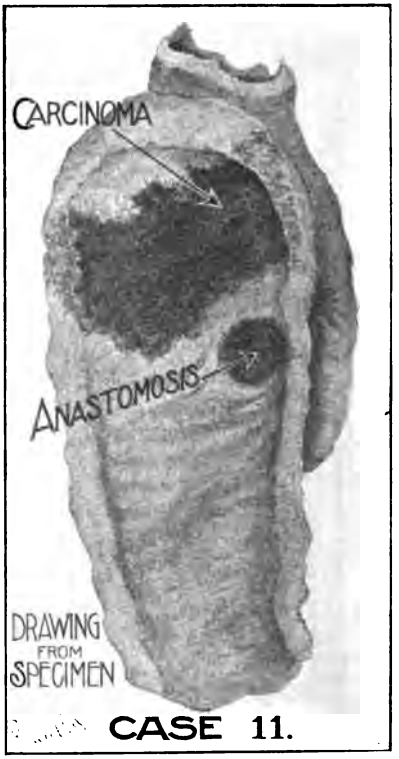
even in the presence of marked distention, a condition with which we frequently have to contend. This was the condition in Cases VIII, X, and XI. I have here an illustration of the placement of the Murphy button in Case XI. The drawing is made from specimen removed postmortem. This is of interest because of the necessarily close proximity of the anastomosis to the malignant growth. The conditions in this case were nearly exactly the same as the conditions in Case VIII, in which





the anastomosis was made quite as near the malignant involvement. Yet this man has a reestablished bowel stream, is living in comfort, now nine months after the operation—a marked contrast to what his condition would be had we resorted to the operation of colostomy, as is usually done in these cases.

CASE I.—*Adenocarcinoma of Cecum. Empyema of Gall-bladder with Stone. Radical Resection. Obstruction not Complete. Recovery.*

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Miss M. A., Chicago. Nurse. Age thirty-nine. Admitted Saint Joseph's Hospital, May 3, 1900. Irregular, somewhat movable growth in right iliac region. Distended gall-badder. Family history good, negative as to cancer. Operation: Anesthetist, Dr. Calvin. Incision over cecum revealed a malignant growth occupying cecum, extending somewhat into the ileum. Cecum broadly resected, well into the small bowel and into the ascending colon. Anastomosis with Murphy button end to side. Incision over the gall-bladder. Solitary stone in the cystic duct with empyema of gall-bladder. Gall-bladder resected and small tube sewed into the cystic duct for drainage. Recovery from operation prompt. Patient still living ten years and four months after the operation and in good health.

CASE II.—*Adenocarcinoma of Cecum. Radical Resection. Obstruction not Complete. Recovery.*

Miss M. L., residence, Germany. Age sixty-four. Nurse. Operation, July 13, 1903, at Saint Joseph's Hospital. Adenopapillo-carcinoma of cecum. Patient very fleshy. Large mass palpable through very thick abdominal wall in right iliac region. Anesthetist, Dr. Kane. Incision revealed malignant growth of cecum adherent to the anterior abdominal wall with omental adhesions. Operation: the adherent omentum, together with the cecum and colon up to the hepatic flexure, with an ellipse of the anterior abdominal wall where the growth was adherent, and quite 3 feet of small bowel was resected in one piece. The end of the colon was closed and ileum anastomosed end to side with the descending colon by means of a Murphy button. The anastomosis was accomplished through a second incision on the left side. It was necessary to resect this large amount of small bowel in order to secure an anastomosis with the colon on the opposite side, without making tension on the mesentery. This patient made a very good recovery and lived five years and twenty-five days in good health, until July 8, 1908, when she died rather suddenly after a few days' illness in Dernbach, Germany. No postmortem was made. I am told death certificate reads "peritonitis."

CASE III.—*Cancer of the Cecum with Obstruction. Radical Operation. Recovery. Died two and three-fourths years after. ward.*

Mrs. J. L. M., Bluffton, Ind. Age sixty. Housewife. Referred for operation by Dr. Hatfield. Operation, September 15, 1906, at Saint Joseph's Hospital. Anesthetist, Dr. Gilpin.

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Several inches of the colon and 8 inches of the ileum removed. Also a number of glands in the mesocolon. Patient recovered rapidly from operation. Remained in good health and free from all pain until March 16, 1907, when she developed nephritis. A small growth was discovered in the neighborhood of the operation. Convulsions occurred and finally the nephritis subsided. She was able to take care of her household duties, and remained quite comfortable until June 14, 1909, when the tumor took on a rapid growth. It soon quite filled the greater part of the right half of the abdomen. Small hard nodular growth projected from the anus. She developed general dropsy and died of exhaustion, July 29, 1909, two years nine and a half months after the operation.

CASE IV.—*Cancer of Cecum with Complete Obstruction. Radical Resection. Death seven days afterward.*

Mr. H. O., Ft. Wayne, Ind. Age seventy. Laborer. Brought into the Saint Joseph's Hospital at night, suffering from obstruction of the bowels of several days' duration. Vomiting for three days. Immensely distended abdomen full of bloody serum. Operation: Resection of the cecum, December 15, 1908. Anesthetist, Dr. Titus. Ileum anastomosed with the ascending colon. Murphy button. Died December 22, 1908, seven days after the operation.

CASE V.—*Carcinoma above Sigmoid. Radical Resection. Complete Obstruction. Recovery from Operation. Recurrent Carcinoma, second operation. Death few months after first operation.*

Mr. G. W. F., Ft. Wayne, Ind. Age sixty. Florist. Referred by Dr. Drayer. Acute obstruction of the bowels. Admitted Saint Joseph's Hospital, June 12, 1909, at 9 P. M. Family history negative as to cancer. Father died of tuberculosis; mother of cardiac disease. Three sisters living. Patient gives a history of gradually increasing constipation for some months. Duration of present acute obstruction, forty-eight hours. Patient vomiting, abdomen immensely distended, pulse 110, temperature 99.4°. Operation, 10.15 P. M. Anesthetist, Dr. Titus. Abdomen opened in median line. Tumor mass occupying colon above sigmoid promptly located and resected. Silk suture end-to-end anastomosis. About 6 inches of bowel with tumor mass removed. Patient made good recovery from the operation. Removed to his home sixteen days after the operation, June 28, 1909. October 23, four months later, the patient

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returned to the hospital because of hemorrhage of bowel. Many bowel movements daily with considerable loss of blood. Patient weak and anemic. Examination revealed a palpable growth high in the sigmoid. Diagnosis: recurrent carcinoma probably at seat of previous anastomosis. Second operation, October 30. Abdomen reopened, seat of previous anastomosis located and found to be healthy, but the bowel was found to be involved in a new location lower down in the sigmoid. This we resected successfully, but the patient, whose condition was already very unsatisfactory, continued to grow worse until ten days later, when he died, five months after the operation.

CASE VI.—*Cancer Upper Rectum and Sigmoid. Complete Obstruction. Radical Resection. Recovery.*

Mrs. A. P., Huntington, Ind. Age sixty-one. Housewife. Admitted Saint Joseph's Hospital, September 15, 1909. Referred by Dr. Hicks. Family history negative as to cancer. Given usual cathartics which did not prove effectual. Constant use of syringe causing hemorrhoids. Lost 20 pounds in weight in the last week. Operated for obstruction of the bowels, September 15, 1909. Anesthetist, Dr. Titus. Median incision revealed carcinoma involving sigmoid with no metastases. Operation: resection of bowel well down toward the anus in the rectum and 2 1/2 inches above growth in sigmoid, end-to-end anastomosis by several rows of silk suture. Recovery prompt. Left hospital, October 14, 1909. Report: patient still living in good health. Stricture formed around site of anastomosis which was kept open by means of dilator. Stricture evidently not malignant, since it remained patent, and patient is in good condition one year after operation.

CASE VII.—*Carcinoma Above Sigmoid. Anastomosis Without Resection. Complete Obstruction. Recovery from operation and eleven months later patient comfortable and has gained in weight.*

Miss M. M., Ft. Wayne, Ind. Age sixty. Dressmaker. Admitted Saint Joseph's Hospital, September 30, 1909. Referred by Dr. Calvin. Obstruction of the bowels due to cancer. Operation: Anesthetist, Dr. Titus. Anastomosis without resection. Family history negative as to cancer. History: constipation with recurrent attacks of obstipation. Pain in the abdomen. Rapid loss in weight. Because of the serious condition of the patient, due to the obstruction, the abdomen was quickly opened and anastomosis made by means of the Murphy button with

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supporting suture, and the abdomen quickly closed. Patient did well after this operation. Twenty days later we felt justified in reopening the abdomen for the purpose of making a radical resection of the growth. The growth, however, because of evident involvement of neighboring structures, proved to be inoperable and was left with the anastomosis intact, and the abdomen again closed. This patient now, eleven months later, is still comfortable and has gained in weight.

CASE VIII.—*Cancer Upper Rectum and Sigmoid. Anastomosis Without Resection. Complete Obstruction. Recovery.*

Mr. W. M. R., Spencerville, Ind. Age sixty-seven. Farmer. Admitted Lutheran Hospital, December 13, 1909. Operation: December 16. History: father died at eighty-seven, cause not known. Mother died at sixty-five of cancer of uterus. Five girls, six boys, all living and in good health. Previous history: diseases of childhood. Malaria at sixteen. Has enjoyed almost perfect health, with the exception of piles, for last twenty-five years. Constipation for last five years. Present history: December 7, could not get bowels to move with usual household cathartics, called local physician, who gave cathartics, enemas, also croton oil without effect. Came to hospital, December 13. Case referred for operation, December 16. Examination revealed a large distended abdomen. Patient vomiting and approaching collapse. Large mass about 4 inches from anus completely closing rectum. Operation: Anesthetist, Dr. Eirich. Anastomosis sigmoid with lower rectum with Murphy button and suture. Saw patient about September 5, 1910, has gained about 25 pounds. Has lost his cachexia, does not look like same patient. Works every day. Eight months and nineteen days after operation. Conditions in this case were nearly identical with conditions in Case XI.

CASE IX.—*Cancer Hepatic Flexure of Colon. Anastomosis Without Resection. Complete Obstruction. Recovery.*

Mr. S. O. M., Ft. Wayne, Ind. Age seventy. Laborer. Admitted Saint Joseph's Hospital, December 21, 1909. Case referred by Dr. Schilling. Operation: anesthetist, Dr. Titus. Anastomosis ascending colon to middle of transverse colon by means of clamp and suture. History negative as to cancer. Previous history: abscess of the liver twenty-five years ago, following injury. Present history: fulness in abdomen. Pain in left side, moving toward the right. Bowels could not be moved. Felt a growth in the right side below ribs. Vomiting

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twenty-four hours' duration. Examination revealed growth at hepatic flexure of the colon. Patient still in good condition and comfortable eight months and twenty-five days after operation.

CASE X.—*Cancer of the Sigmoid and Upper Rectum. Anastomosis Without Resection. Complete Obstruction. Death ten days after operation.*

Mr. J. M. M., Columbia City, Ind. Age seventy-four. Farmer. Admitted Saint Joseph's Hospital, July 9, 1910. Case referred by Dr. Greiser. Anesthetist, Dr. Quinn. The sigmoid anastomosed with upper rectum by means of the Murphy button and supporting suture. Patient brought in in semiconscious condition. Abdomen immensely distended, pulse rapid. Duration of obstruction one week. Vomiting regularly for two days. History of bowel trouble, six months. Rapid loss of weight. Bowels moved next day after operation. Passed the button on seventh day. Developed a colliquative diarrhea. Died of exhaustion, July 19, ten days after operation.

CASE XI.—*Carcinoma Sigmoid and Upper Rectum. Anastomosis Without Resection. Death from Bronchopneumonia three days after operation.*

Mr. P. K., Ft. Wayne, Ind. Age seventy-five years eleven months. Laborer. Referred for operation by Dr. McArdle. Acute obstruction in large bowel due to malignant growth. Tumor palpable by finger in the rectum. Obstruction with vomiting several days. Abdomen immensely distended. Operation, August 7, 1910, Saint Joseph's Hospital, 10 P. M. Anesthetist, Dr. Titus. Abdomen opened left of median line; revealed carcinoma involving upper rectum and sigmoid firmly fixed to the neighboring pelvic structures. Anastomosis was made between the bowel below and above the growth by means of a Murphy button which was fixed in the upper limb of the anastomosing bowel in the usual way. The other half of the button was passed through the anus by an assistant and grasped by the operator and locked through a small opening. A double layer of retaining sutures was placed about the button. Patient died three days after the operation. Postmortem examination revealed death to be due to bronchopneumonia and chronic interstitial nephritis. No infectious peritonitis was found in the abdomen. Seat of anastomosis found to be in good condition with very few adhesions.

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COMMENTS.

It will be noted in the eleven cases reported, five are female and six male, which is not contrary to the rule. In most, if not all, of the large collections of cases reported cancer of the bowel is more prevalent in male than in female, as in Petermann's report of 117 carcinomata of the bowel; in 115 cases sixty-eight were males and forty-seven females. Anchutz's series, 126 cases, quoted by Petermann, gave eighty-nine males and thirty-seven females.

In this class of cases where rapid and efficient work is so necessary, the bowel to be resected is usually not easily accessible. Nor can any considerable amount of the bowel be brought into the wound, by reason of the distention which naturally goes with an obstruction of many hours' or even of several days' duration. The emptying of the bowel by means of trocar is a slow process and quite disappointing, as we do not, as a rule, get a continuous stream of gas or stool; this procedure, too, carries with it a certain amount of danger of infection and additional trauma. The placing of bowel clamps or bowel ligatures for the purpose of controlling leakage during an anastomosis or resection has also certain difficulties, especially in these cases. For this reason I have permitted myself to take the liberty in this paper of briefly describing by means of a few illustrations an original method of bowel anastomosis. It has the advantage of keeping the bowel practically closed until the anastomosis is complete, requires no special instrument, does away with the provisional bowel clamps, is quickly performed and efficient.

End-to-end anastomosis will probably be most easily illustrated by a demonstration of resection of small bowel.

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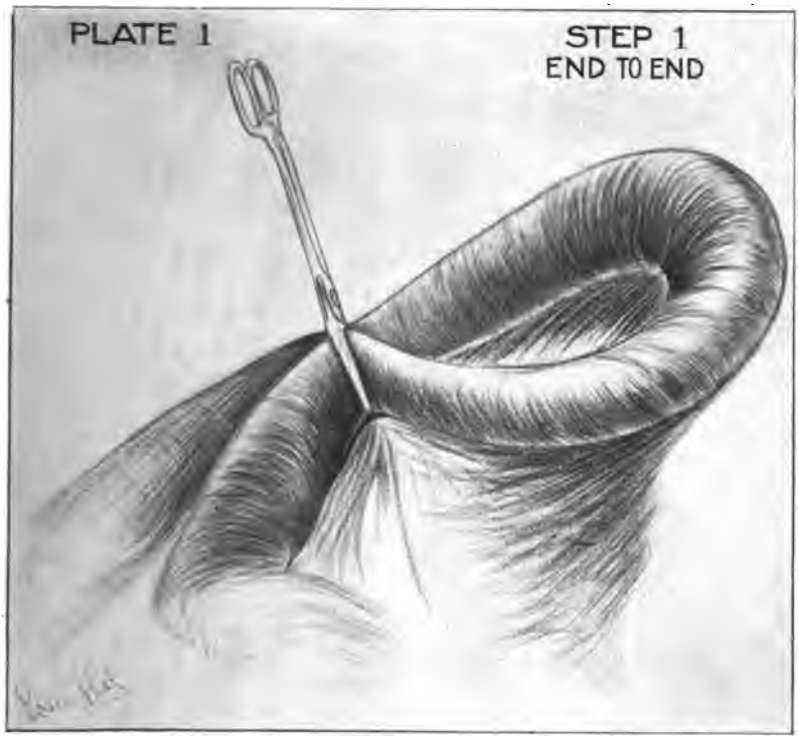
DESCRIPTION OF OPERATION.

End to end.



Step No. 1.—Shows the small bowel laid together at the point where the end-to-end anastomosis is to be made. The forceps should grasp the bowel only and should not go beyond the mesenteric border in either limb of the bowel, yet should go quite up to the mesenteric border.

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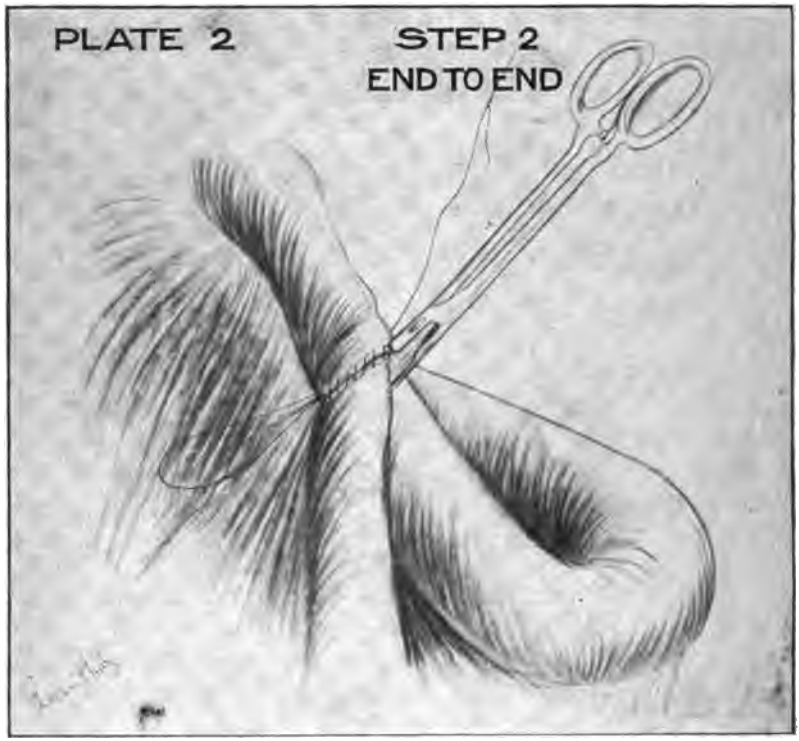

Step No. 2.—Illustrates the forceps turned over presenting what we will term the posterior suture line. The suture beginning at the distal margin of the bowel—that is, that margin nearest the lock of the forceps—and is continued on, including muscularis and serosa, to the mesenteric border. The needle is now passed through the mesentery so that it presents on the anterior surface and is to be used with the same thread in making the anterior suture line.

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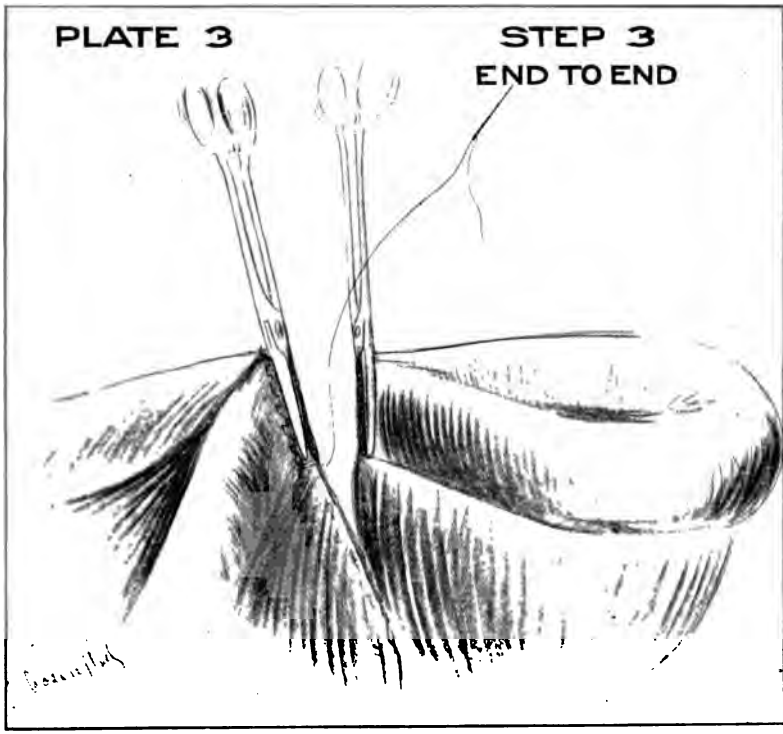

Step No. 3.—The bowel to be resected is grasped with the second pair of forceps and divided between the two forceps, the cut surfaces being immediately cauterized with pure carbolic acid. Care should be taken not to cut too close to the forceps. The mesentery is now also divided, as shown in the illustration.

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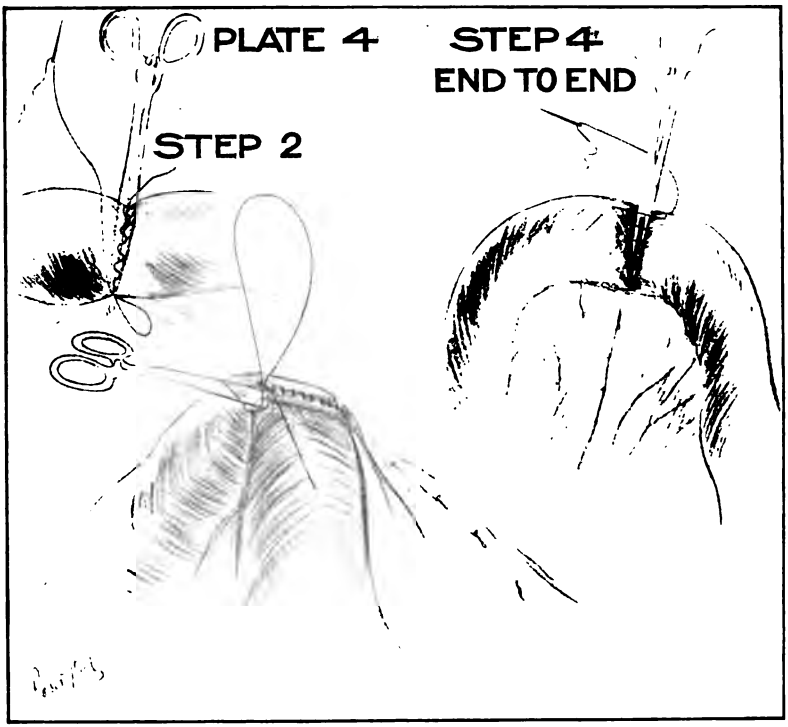

Step No. 4.—By means of the needle already brought forward, as described in step 2, the anterior bowel wall, by means of a continuation of the suture, is sewed over the blades of the forceps, the stitches including muscularis and serosa. This suture buries the forceps in the same manner as described in simple anastomosis without resection and is carried around the forceps, forming a purse string.

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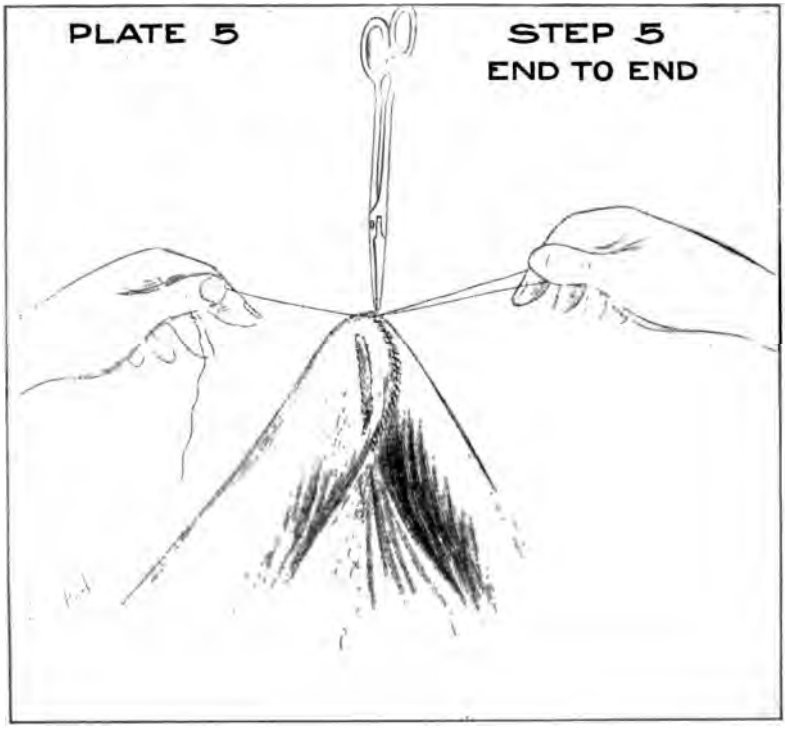

Step No. 5.—As the forceps is withdrawn, the purse string is drawn tight and the anastomosis is complete, with the exception of separating the crushed ends of the bowels which now lie within the suture lines; that is, the crushed portions lie endointestinally. If a second layer of sutures is desired, this may be made by simply rotating the forceps and applying the suture before withdrawing the forceps.

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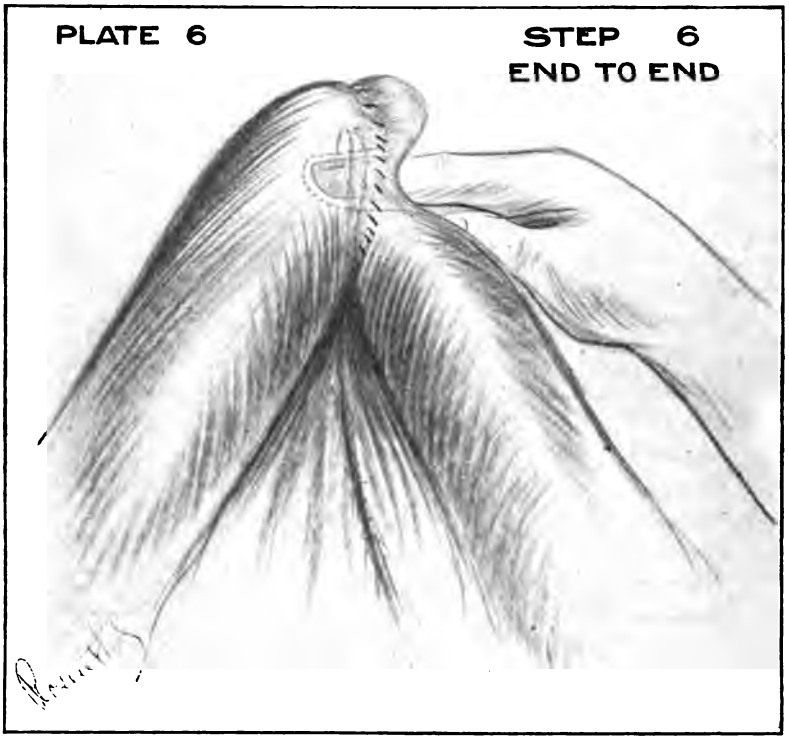

Step No. 6.—Now invaginate the bowel with the finger so as to separate the crushed ends, lying as they do within the bowel. It will have been noted that the anastomosis has been accomplished before the bowel is actually opened.

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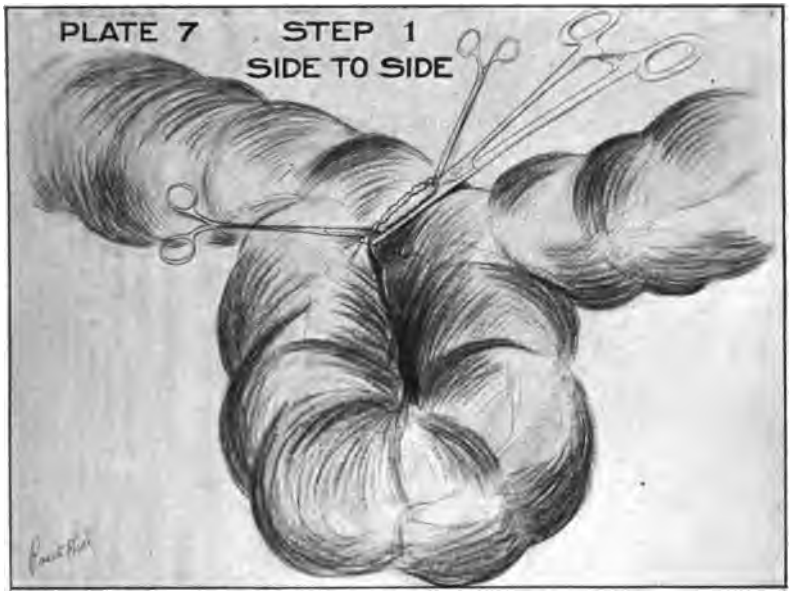
DESCRIPTION OF OPERATION.

Side to side.



Step No. 1.—In simple anastomosis without resection, say of the large bowel, the two limbs of the bowel to be anastomosed are brought together by means of two pairs of mosquito forceps or two small sutures which are held by an assistant. The bowel is then grasped by a pair of ordinary Kocher hemostatic forceps which are closed upon them with crushing effect, as in illustration No. 1.

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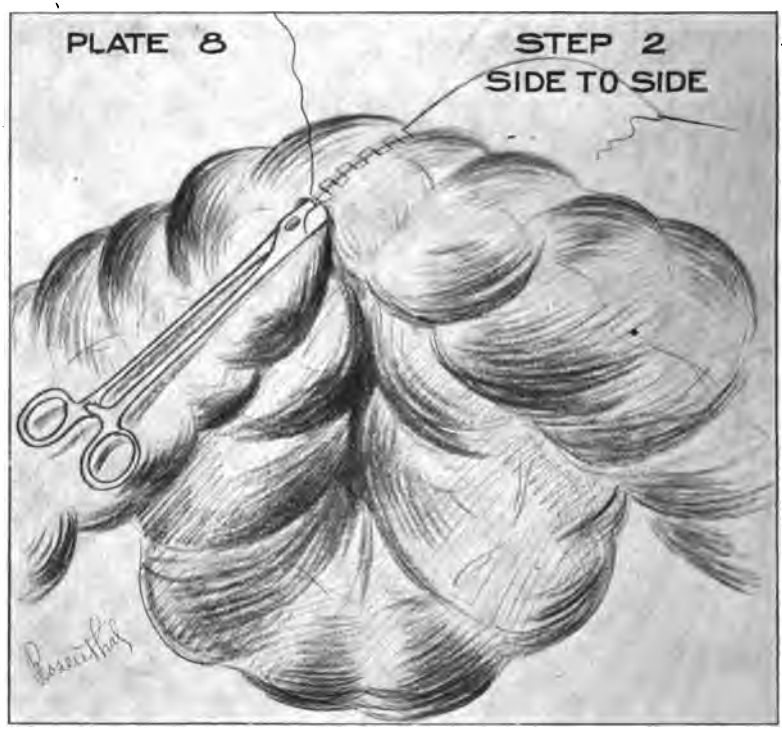

Step No. 2.—The forceps are then turned over, presenting the posterior surface for suture line. A silk suture is then placed, picking up the muscularis and serosa in the ordinary manner of bowel suture, starting at the bowel nearest the lock of the forceps and carried forward to the tip. By rotating the forceps a second suture line may be made.

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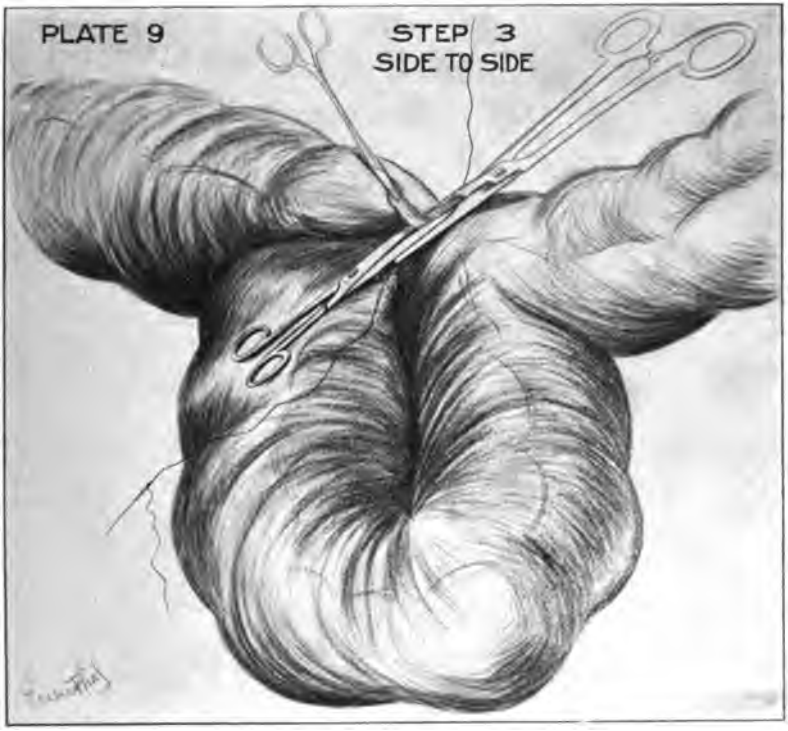

Step No. 3.—The forceps are now turned back in the position in which they were when the bowel was first grasped. The needle and thread are left for the continuation of the suture anteriorly. That portion of each limb of the bowel which protrudes from the grasp of the forceps is cut away by means of a pair of scissors or a knife. This surface is immediately cauterized with pure carbolic acid.

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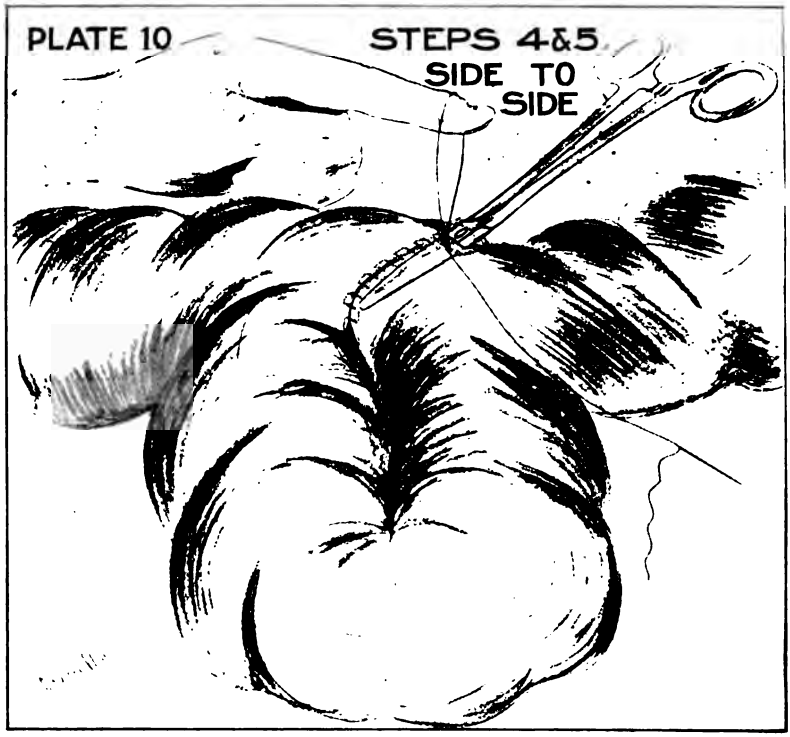

Step No. 4.—With the needle already in place, continue the suturing anteriorly in such a manner as to fold the bowel over the forceps, burying it.

Step No. 5.—Having reached the end of the suture line, a loop of the thread is kept long, while the needle is passed around the forceps in the form of a purse string. By rotating the forceps a second line of suture can be placed here if desired.

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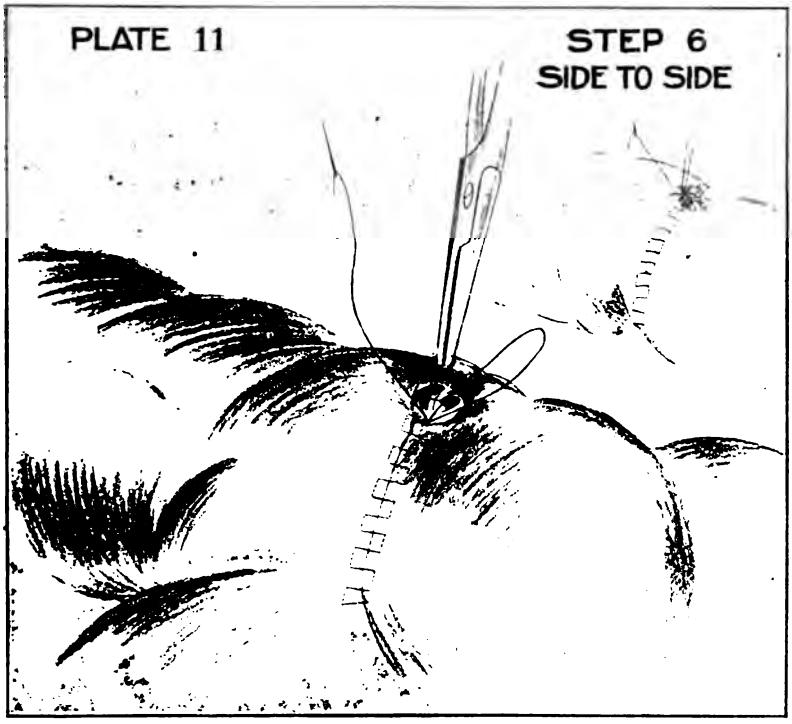

Step No. 6.—As the forceps is withdrawn, the purse string is tied, care being taken on withdrawing the forceps and tightening the suture to see that the crushed bowel remains interior to the purse string. The anastomosis is now complete. The portion of bowel crushed by the forceps is entirely endointestinal.

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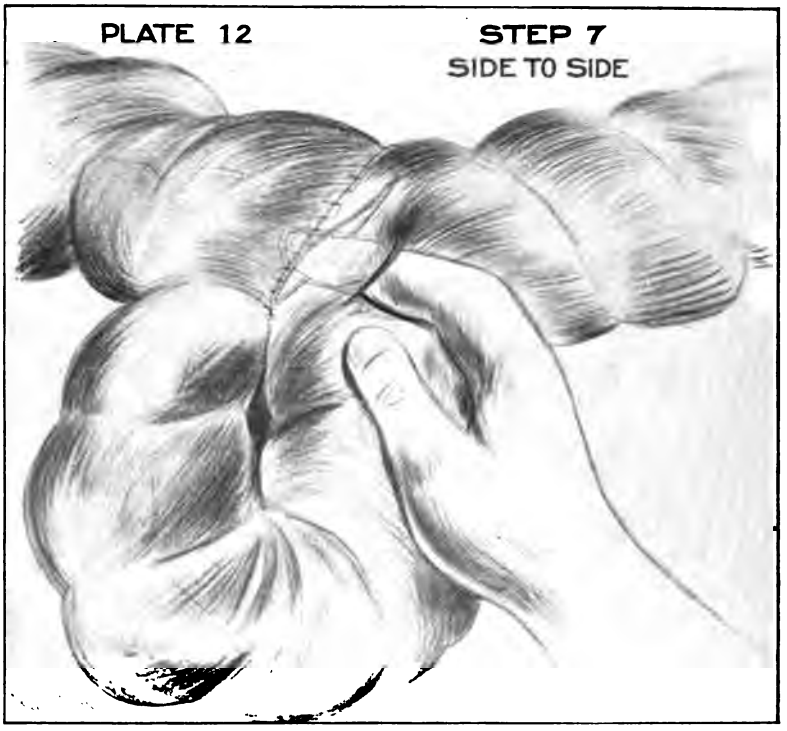

Step No. 7.—Invaginate the bowel with the finger, separating the surfaces which are crushed together. The finger covered with the invaginated bowel is thrust through the anastomosing opening. Gas will immediately pass from one bowel to the other.

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PLATE 16

PRESSURE TEST

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REVIEW OF LITERATURE.

In the review of the literature of cancer of the bowel I have appended 323 cases with reference to duration of life after operation. In Petermann's cases, out of 117 carcinomata of the bowel, over 40 per cent. had produced obstruction. He found malignant growths occur most frequently where the bowel stream is slowest and most subject to mechanical and chemical irritation, as follows:

Sigmoid,	56 cases
Transverse colon,	17 cases
Cecum,	13 cases
Hepatic flexure,	12 cases
Splenic flexure,	8 cases
Ascending colon,	7 cases
Descending colon,	4 cases

Preternatural anus was made in thirty cases of obstruction due to cancer; mortality, 46 per cent. Resection of the tumor in fourteen cases of obstruction; mortality, 79 per cent. In J. von Mikulicz's 106 cases of cancer of the bowel, twenty-three were brought to the clinic with acute obstruction. Mikulicz speaks of the fact that carcinoma of the bowel may exist for a long time; in fact, much longer than is ordinarily suspected, mentioning a case of his own observation, where the patient lived in comparative comfort four and a half years after a colostomy had been done. He places the period of latent existence or quiescence of cancer of the bowel at from one-half to three years. Of the 323 cases operated upon:

Seventy-five died, having lived less than ten days after the operation.

Fifteen died, having lived less than thirty days after the operation.

Seventeen died, having lived less than three months after the operation.

Twenty-three died, having lived less than six months after the operation.

Sixteen died, having lived less than one year after the operation.

Thirteen died, having lived less than two years after the operation.

Six died, having lived less than three years after the operation.

Two died, having lived less than four years after the operation.

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One died, having lived less than five years after the operation.

Three died, having lived more than five years after the operation.

At the time of this report:

Fifteen cases are living, having survived the operation five years or more.

Seven cases are living, having survived the operation four years.

Twelve cases are living, having survived the operation three years.

Twenty-six cases are living, having survived the operation two years.

Twenty cases are living, having survived the operation one year.

Twenty-five cases are living, having survived the operation six months.

Twenty-nine cases are living, having survived the operation three months.

Sixteen cases are living, having survived the operation one month.

Two cases are living, having survived the operation ten days.

Total, 323 cases.

In 334 cases, including my cases, twenty-one lived five years or more; thirty lived four years or more; forty-eight lived three years or more; eighty-eight lived two years or more; 125 one year or more; 176 six months.

CONCLUSIONS.

Obstruction of the bowel due to carcinoma is not hopeless as to cure by radical operation.

Incomplete excision of all cancerous tissue must necessarily result in recurrence of the growth. Anastomosis without resection of the malignant growth should be the operation of election in obstruction due to cancer, where the radical operation —that is, complete excision—is impossible.

Anastomosis without resection low in the pelvis, where the bowel is accessible with difficulty can be successfully accomplished by the assistance of the Murphy button.

Anastomosis without resection probably bears the same relation to cancer of the bowel as does gastroenterostomy to cancer of the pylorus.

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The clamp-and-suture method of bowel anastomosis, as described, is practical, rapid, and trustworthy, and applicable in a large variety of bowel cases requiring resection or anastomosis.

INTESTINAL CANCER.

LENGTH OF TIME OF SURVIVAL AFTER OPERATION.

BIBLIOGRAPHY.

Ashton. *Maryland Med. Jour.*, 1892, xxvii, 773; one case, three and one-half months, living.

Bars and Robson. *Lancet*, Lond., 1895, i, 1513; one case, eleven days.

Barton. *Maryland Med. Jour.*, 1892, xxvii, 801; five years twenty-three days, living.

Barton. *Maryland Med. Jour.*, 1893, xxix, 335; forty-three hours.

Battle. *Lancet*, Lond., 1898, ii, 1265; one case, three weeks, living.

Benton. *Glasgow Med. Jour.*, 1902, lvii, 36; one month, living.

Bidwell. *West Lond. Med. Jour.*, 1901, vi, 124; one month two days, living.

Blake. *Bost. Med. and S. Jour.*, 1900, cxliii, 6; four days.

Booth. *Med. Rec.*, N. Y., 1899, lv, 561; six months twenty-two days, living.

Boucher. *N. York Med. Jour.*, 1902, lxxv, 241; five weeks, living.

Bouilly. *Bull. et mém Soc. de cher. de Par.*, 1888, xiv, 601; two months living.

Bowker and Worral. *Australas. Med. Gaz.*, Sidney, 1899, xviii, 388; eleven months twenty days, living.

Coley. *Ann. Surg.*, Phila., 1900, xxxi, 244; five months, living.

Comte. *Rev. méd. de la Suisse*, Rom., Geneve, 1890, x, 402; seven and one-half months.

Conklin. *Buffalo Med. Jour.*, 1901–2, xli, 168; three months three weeks, living.

Eccles. *Brit. Med. Jour.*, 1900, i, 69; six months, living.

Edmunds. Transact. Clin. Soc. Lond., 1897, xxx; first case died five years ten months after operation; death partly due to alcohol; second case died three years three months after operation.

Fowler. *Brooklyn Med. Jour.*, 1900, xiv, 136; two and one-half years, living.

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Fraikin. *Bull. Soc. d'Anat. et Physiol. de Bordeaux*, 1899, xx, 89; died twenty-six hours after operation.

Golding-Bird. Tr. Clin. Soc. Lond., 1885–6, xix, 70; died ten days after operation.

Goullioud. *Echo Med. de Toulouse*, 1901, xv, 570; one month twenty-one days, living.

Gouillioud. *Assoc. franc. de Chir.*, Par., 1901, xiv, 529; four months seven days, living; second case, four months five days, living; third case died few hours after operation; fourth case, seven months twenty-seven days, living.

Heaton. *Lancet*, Lond., 1901, i, 928; one year six months, living.

Hobson. *Med. Rec. N. Y.*, 1893, xliii, 280; one month after operation, living, but relapse is expected.

Hochenegg. *Archiv. f. klin. Chir.*, Berl., 1902, lxviii, 172; five months after operation, living, other cancer developed.

Hofmokl. Bericht. D. K. Krankenanst., Rudolf Stift., in Wien, 1888, 318; two months, living.

Horrocks. *Brit. Med. Jour.*, 1894, i, 236; one month twenty-five days, living.

Hott. *Lancet*, Lond., 1894, i, 538; three months twenty-four days, living.

Imbert and Gilis. *Bull. et mém. Soc. de chir. de Par.*, 1901, xxvii, 357; two months sixteen days, living.

Israel. *Berlin. klin. Wchnschr.*, 1894, xxxi, 275; five months six days, living; patient is eighty-five years old.

Israel. *Ibid.*, 1895, xxxii, 110, same patient mentioned in previous article lived sixteen and one-half months, died of pneumonia.

Jeannell. *Bull. et mém. Soc. de chir. de Par.*, 1886, xii, 5; died thirteen days after operation.

Johnson. *Boston Med. and Surg. Jour.*, 1899, xcli, 364; two months, living.

Keetley. *Lancet*, Lond., 1896, ii, 229; first case, one year six and one-half months, living; second case died about two months after operation.

Knaggs. *Lancet*, Lond., 1898, i, 1042; four months after operation, living.

Korte. Verhandl. d. deutsch. Gesell. f. Chir., Berl., 1900, xxix, 61; first case, eight and one-half years, living; second case, six years, living; third case, five and one-fourth years, living; fourth case, one year, living; fifth case, ten months, living;

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sixth case, five years ten months, living; seventh case, three years, living; eighth case, died with relapse one and three-fourths years after operation; ninth case, died one year after operation.

Korte. *Deutsche med. Wchnschr.*, Leipz., 1900, Ver. Beil., 93; five months four days, living.

Kiemmer. *Rev. méd. de la Suisse Rom.*, Geneve, 1898, xviii, 264; four months, living.

Lange. *Med. Rec. N. Y.*, 1893, xliii, 279; died on tenth day after operation.

LeDentre. *Bull. Méd.*, Paris, 1901, xv, 753; three years after operation, patient was again operated for cancer of ovary.

Lee and Gould. *Lancet*, Lond., 1885, ii, 1091; died sixty-six hours after operation.

Lentaigne. *Dublin Jour. Med. Sc.*, 1898, cvi, 455; first case died thirteen months after operation; second case, two years, living.

Lilienthal. *Ann. Surg.*, Phila., 1898, xxvii, three and one-half years after operation, living; no recurrence.

McCormac. *Lancet*, Lond., 1892, i, 310; ten months, living.

Macewan. *Scott. Med. and Surg. Jour.*, Edinb., 1898, ii, 1; six months, living.

McGillivray. Transact. M. Chir. Soc. Edinb., 1897–8, xvii, 51; three years four months, living.

McKay. *Austral. Med. Gaz.*, Sidney, 1902, xxi, 362; died eighth day.

Malard. *Glasgow Med. Jour.*, 1901, lvi, 192; ten months after operation, living.

Montgomery. *Phila. Med. Times*, 1888–9, xix, 408; died third day after operation.

Morestin. *Bull. et mém. Soc. anat. de Par.*, 1901, lxxvi, 589; died ten days after operation.

Morton. Transact. Path. Soc. Lond. 1892–3, xliv, 89; died three months after operation.

Musser and Morton. *Univ. Med. Mag.*, Phila., 1895–6, viii; lived nine months after operation.

Newman. *Glasgow Med. Jour.*, 1901, lvi, 205; six months, living.

Pantzer. *Indiana Med. Jour.*, 1897–8, xvi, 267; six months, living.

Petroff. Compte rend. Cong. internat. de Med., Mosc., 1899, v, 122; died five days after operation.

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Pigeon. *Brit. Med. Jour.*, Lond., 1891, i; died twenty-six days after operation.

Reverdin. *Arch. prov. de Chir.*, Par., 1893, ii, 25; five and one-half months, living.

Roper. Trans. Clin. Soc. Lond., 1892–3, ii, 1235; died year after; recurrence in liver.

Sacre. *Jour. de méd. chir. et pharm.*, Brux., 1889, lxxxvii, 233; died second day.

Schopf. Jahrb. d. Wien. k. Krankenanst., Wien, 1896, iii, 1044; three months, living.

Scott. *Brit. Med. Jour.*, 1900, ii, 663; six months, living.

Seefisch. *Deutsche med. Wchnschr.*, Leipz., 1898, xxiv, Ver. Beil., 110; ten months after operation, living.

Sentaigne. Trans. Rov. Acad. M. Ireland, Dubl., 1898, xvi, 192; first case, died thirteen months after operation; second case, two years, living.

Small. *Intercolon. Med. Jour.*, Australas.; Melbourne, 1896, i, 413; died twenty-three days after operation.

Smith. *Am. Med.*, Phila., 1902, iii, 780; one year, living.

Souligoux. *Assoc. franc. de Chir.*, Par., 1901, xiv, 526; two years, living.

Storchi. Morgagni, Milano, 1897, xxxix, 288; more than a year, living.

Weir. *Ann. Surg.*, St. Louis, 1886, iii, 469; two and one-half months after operation, living.

White. *Quart. Med. Jour.*, Sheffield, 1898–9, vii, 318; three and one-half years after operation, living.

Zimmermann. *Zeit. f. klin. Chir.*, Tübing., 1900, xxviii, 303; Case 1, fourteen years, living; Case 2, two and one-half years, living; Case 3, one and three-fourth years, living; Case 4, five and one-half months, living; Case 5, five and one-half months, living; Case 6, five months, died few weeks after left hospital.

Syme. *Lancet*, Lond., 1904, i, 148; three months after operation, living.

Petermann. *Arch. f. klin. Chir.*, Berl., 1908, lxxxvi, 53–131; *Resection of tumor:* Case 1, died two days after operation; Case 2, died six hours after operation; Case 3, died two days after operation; Case 4, died three weeks after operation; Case 5, died six days after operation; Case 6, died twelve hours after operation; Case 7, died three days after operation; Case 8, died fourteen hours after operation; Case 9, died twelve hours after operation; Case 10, died six days after operation; Case 11, died two days

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after operation. *Enteroanastomose:* Case 12, died eight days after operation; Case 13, died two days after operation; Case 14, died three weeks after operation; Case 15, died five weeks after operation. *Anus preternat.:* Case 16, died twelve hours after operation; Case 17, died two days after operation; Case 18, died ten days after operation; Case 19, died two days after operation; Case 20, died two days after operation. *Enteroanastomose:* Case 21, died three-fourths of a year after operation (marasmus); Case 22, died twelve hours after operation; Case 23, died two days after operation; Case 24, died two months after operation (marasmus); Case 25, died three days after operation; Case 26. died three months after operation; Case 27, died four months after operation; Case 28, died eight days after operation; Case 29, died three days after operation (peritonitis); Case 30, died eight days after operation; Case 31, died two days after operation; Case 32, died two days after operation; Case 33, died one day after operation; Case 34, died one day after operation; Case 35, died two months after operation (cachexia); Case 36, died two months after operation (marasmus); Case 37, died two days after operation (peritonitis); Case 38, died five months after operation (peritonitis). *Exploratory Laparotomy:* Case 39, died two days after operation; Case 40, died ten days after operation; Case 41, died fourteen days after operation; Case 42, died five days after operation; Case 43, died three weeks after operation; Case 44, died three weeks after operation; Case 45, died three-fourths of a year after operation (cachexia); Case 46, died four weeks after operation. *Abscess incision:* Case 47, died two months after operation; Case 48, died four months after operation; Case 49, died four months after operation; Case 50, died six weeks after operation. *Anus preternat.:* Case 51, died three months after operation; Case 52, died four months after operation; Case 53, died two days after operation; Case 54, died four months after operation. *Enteroanastomosis:* Case 55, died four months after operation; Case 56, died six months after operation; Case 57, died seven months after operation; Case 58, died six weeks after operation; Case 59, died eight days after operation; Case 60, died one-half year after operation; Case 61, died three months after operation; Case 62, died two months after operation; Case 63, two months, living. *Radical Operation, resection with circular suture:* Case 64, died three-fourths year, after operation; Case 65, died six days after operation; Case 66, died seven days after operation; Case 67, died seven days after operation. *Resection*

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with lateral apposition: Case 68, died three-fourths day after operation (cancer of liver); Case 69, one and one-fourth days, sound and well. *Resection with enteroanastomosis:* Case 70, died seven days after operation; Case 71, died five days after operation; Case 72, three and one-fourths years after operation, living; Case 73, died six weeks after operation (apoplexy); Case 74, two and one-half years, living; Case 75, two years after operation, living; Case 76, died fourteen days after operation (marasmus); Case 77, died five months after operation (cancer of liver); Case 78, three years after operation, living; Case 79, died three months after operation; Case 80, one year, living; Case 81, four months, living; Case 82, seven and one-half years, living; Case 83, died eight days after operation; Case 84, six and one-half years, living, Case 85, died two and one-half months after operation; Case 86; died two days after operation; Case 87, died six weeks after operation; Case 88, died second day after operation; Case 89, three and one-half years, living; Case 90, died four months after operation; Case 91, died second day after operation; Case 92, died three months after operation; Case 93, died few months after operation (cancer of liver); Case 94, more than two years, living; Case 95, died eight months after operation (cachexia); Case 96, more than two years, living; Case 97, died one year after operation (cancer of liver); Case 98, died one year after operation (cancer peritonitis); Case 99, one and one-half years after operation, living; Case 100. one year living; Case 100, one year after operation, living; Case 101, three-fourths year after operation, living; Case 102, eight months after operation, living; Case 103, six months after operation, living. *Operation at three sessions:* Case 104, five months after operation, living (peritonitis); Case 105, eight years, sound and well; Case 106, died three and one-half years after operation (cancer of liver); Case 107, died eight days after operation; Case 108, died two days after operation; Case 109, three and one-half years, perfectly well; Case 110, three and one-half years, perfectly well; Case 111, died nine months after operation (cancer of ovary); Case 112, three months, living; Case 113, died five months after operation (cancer of liver); Case 114, died seven months after operation (recurrence); Case 115, died two days after operation; Case 116, died eight days after operation; Case 117, died two months after operation.

Littlewood. *Lancet*, Lond., 1903, i, 1511; Case 1, two years after operation, living; Case 2, one and one-fourth years after operation, living; Case 3, seventeen months after operation, liv-

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ing; Case 4, two years after operation, living; Case 5, one and one-third years after operation, living; Case 6, two years after operation, living; Case 7, seven months after operation, living; Case 8, died one month twenty days after operation; Case 9, two and one-half months after operation, living; Case 10, died six days after operation; Case 11, died six days after operation; Case 12, died six days after operation; Case 13, three years after operation, living; Case 14, one year after operation, fairly well.

Woollcombe. *Brit. Med. Jour.*, Lond., 1903, i, 71; Case 1, died one year after operation; Case 2, two years after operation, living.

Schloffer. *Beiträge z. klin. Chir.*, Tübingen, 1903, xxxviii, 150, 492; Case 1, died one month after operation; Case 2, died two days after operation; Case 3, died eight days after operation; Case 4, three years after operation, living; Case 5, one and one-fourth years after operation, living; Case 6, died seven days after operation (gangrene); Case 7, died two days after operation (peritonitis); Case 8, died five days after operation (gangrene); Case 9, died fourteen days after operation; Case 10, four months after operation, living; Case 11, one and one-half months after operation, well, committed suicide; Case 12, died six days after operation; Case 13, died two days after operation; Case 14, died two days after operation (peritonititis); Case 15, died nine months after operation; Case 16, five years after operation, living; Case 17, two years after operation, living; Case 18, died day of operation; Case 19, one and one-half years after operation, living; Case 20, four months after operation, living; Case 21, five months after operation, living; Case 22, three months after operation, living.

Goullioud. *Bull. Soc. de chir. de Lyon*, 1899–1900, iii, 85–91; seven months after second operation, living.

Schmid. *Med. Cor.-Bl. d. Württemb. Aerztl. Ver.*, Stuttg., 1903, lxxiii, 186; died after six and one-half months.

Mikulicz. *Arch. f. klin. Chir.*, Berl., 1903, lxix, 28–47; *Radical operation:* Case 1, died after five and one-half years; Case 2, died after fourteen and one-third months; Case 3, died after thirteen months; Case 4, died after eleven months; Case 5, died after eight months; Case 6, died after seven months; Case 7, died after six months; Case 8, died after five and one-half months; Case 9, died after three and one-half months; Case 10, living after thirteen months, has recurrence; Case 11, nine and one-fourth years after operation, living; Case 12, living after five

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and three-fourth years; Case 13, five and three-fourths years after operation, living; Case 14, living after four and one-fourth years; Case 15, four years after operation, living; Case 16, living after two years; Case 17, one and one-half years after operation, living; Case 18, living after one and one-fourth years; Case 19, one-fourth year after operating, living; Case 20, living after one-fourth year.

Patel and Cavaillon. *Arch. gén. de méd.*, Paris, 1903, ii, 2241; six months, living.

Sato. *Wien klin. Wchnschr.*, 1903, xvi, 1308; four months, living.

Bergalonne. *Rev. med. de la Suisse*, Rom., Geneve, 1908, xxviii, 532; four months after operation, living.

Gage. *Boston Med. and Surg. Jour.*, 1903, cxlix, 277; Case 1, died three hours after operation; Case 2, three years after operation, living; Case 3, died two months after operation; Case 4, seven years after operation, living.

Stirling. *Australas. Med. Gaz.*, Sydney, 1903, xxii, 346; five and one-half months, living.

Gibb. *Glasgow Med. Jour.*, 1903, lx, 33; six months after operation, living.

Doebblin. *Deutsche mil. ärztl. Ztschr.*, Berl., 1908, xxxvii, 1025; four months after operation, living.

Sasse. *Deutsche med. Wchnschr.*, Leipz., 1903, xxix, 769; after three years, living, without recurrence.

Guillet. *Bull. et mém. Soc. de chir. de Par.*, 1904, xxx, 1003; eight and one-half months after operation, living.

Quenu. *Bull. et mém. Soc. de chir. de Par.*, 1904, xxx, 919; one year after operation, living.

Sherrill. *Trans. South. Surg. and Gyn. Asso.*, 1903, Phila., 1904, xvi, 49; Case 1, died eighteen hours after operation; Case 2, two years eight months after operation, living.

Tamsini. *R. Ist. Lomb. d. sc. e lett.*, Milano, 1904, xxxvii, 768; one year eight months after operation, living.

Morton. *Brit. Med. Jour.*, Lond., 1904, ii, 1449; Case 1, died one year, nine months after operation (recurrence); Case 2, five years after operation, living; Case 3, died eighteen months after operation (recurrence); Case 4, four years after operation, living; Case 5, one year after operation, living; Case 6, died one and one-half years after operation (recurrence); Case 7, one year after operation, living.

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Tschudy. *Cor.-Bl. f. Schweiz. Aerzte*, Basel, 1905, xxxi, 114, one month, twenty days after operation, living.

Olmsted. *Canad. Jour. Med. Sc.*, Toronto, 1905, xviii, 90; two months after operation, living.

Klein. *Journ. d. Sc. méd. de Lille*, 1905, ii, 81; died twelve days after operation.

Walter. *Nederl. Tydschr. v. Geneesk.*, Amsterd., 1905, xli, 1101; one and one-half years, living.

Steinthal. Verhandl. d. deutsch. Gesellsch. f. Chir., Berl., 1904; xxxiii, 250; two years after operation, living, but has recurrence.

Gauthier. *Lyon Méd,,* 1905, cv, 761; five months after operation, living.

Jaboulay. *Lyon Méd.*, 1905, cv, 725, two and one-half months after operation, living.

Savariaud. *Bull. et mém. Soc. de chir. de Paris*, 1905, xxxi, 872; Case 1, nine months after operation, living; Case 2, died eighteen months after operation.

Kennedy. *Detroit Med. Jour.*, 1905, v, 306; two months after operation, living.

Martinez. *Rev. méd. de Bogota*, 1904–5, xxiv, 325; one year, eight months, living.

Newbolt. *Liverpool Med. Chir. Jour.*, 1905, xxv, 55; Case 1, one year after operation, living; Case 2, one year five months after operation, living.

Pauchet. Assoc. Franc. de Chir., Par., 1905, xviii, 820; Case 1, had recurrence twenty months after operation, died three months later; Case 2, died nineteen days after operation; Case 3, died several months after operation.

Lilienthal. *Ann. Surg.*, Phila., 1906, xliii, 145; four months after operation, living.

Neumann. *Deutsche med. Wchnschr.*, Leipz. u. Berl., 1906, xxxii, 542; Case 1, died two days after operation; Case 2, five and one-half years after operation, living; Case 3, eight months after operation again operated for metastasis in ovary, died three months later; Case 4, seven months after operation, living; Case 5, two years after operation, living; Case 6, one and one-half years after operation, living; Case 7, one and one-half years after operation, living.

Cushing. *Ann. Surg.*, Phila., 1906, xliv, 261, two years after operation, living.

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Bazy. *Bull. et mém. Soc. de chir. de Par.*, 1906, xxxii, 1029; one year after operation, living.

Vaughan. *Clinique*, Chicago, 1907, xxviii, 292; Case 1, recurrence six months after operation, died nine months later; Case 2, two and one-half years after operation, living.

Tansini. *Riforma Med.*, Palermo, 1904, xx, 973; seven months after operation, living.

Condon. *Med Herald*, St. Joseph, Me., 1905, xxiv, 556; Case 1, died sixteen days after operation; Case 2, died ten weeks after operation; Case 3, nine months after operation, living; Case 4, died two days after operation.

Newbolt. *Med. Press and Circular*, Lond., 1906, lxxxii, 237; Case 1, thirteen months after operation had recurrence, soon after died; Case 2, one year four months after operation, living.

Savariaud. *Bull. et mém. Soc. de Chir. de Par.*, 1909, xxxv, 758; two years after operation, living.

Westby. *Liverpool Med. Chir. Jour.*, 1885, v, 470; died four months after operation.

DISCUSSION.

DR. J. H. CARSTENS, Detroit.—Mr. President: After listening very attentively to Dr. Rosenthal's paper, we come around to the the same old story of early diagnosis, and if there is one thing we must impress upon the general practitioner it is the fact that when a woman passes forty, has no sepsis, and is steadily and continually losing weight, with some kind of obscure symptoms in the belly, it may mean malignant growth. By thus impressing the general practitioner we probably will get some of these cases early so that we can make an exploratory incision and detect cancer when it is small and can be removed radically.

As far as Dr. Rosenthal's elegant paper and ingenious operation are concerned, it seems to me that it is a very good way of operating. The only thing that struck me was simply cauterizing the ends of the bowel with carbolic acid would not be sufficient to stop hemorrhage, and one may have a severe hemorrhage in such cases. A number of years ago I remember being called about 150 mile from home to see a supposed ovarian tumor of some kind and to remove it. When I got there I found the abdomen of the woman was distended very much with ascitic fluid. The woman had cancer of the splenic flexure of the colon which was absolutely adherent and could not be removed and the only thing I could do was to make an anastomosis and short-circuit the bowel, and so I brought the lower part and the upper part together like this (illustrating on blackboard), sewed it across here with silk for about 3 inches, and I did that simply because it was easier to do it. When I got through with that I

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made a cut here, half an inch away from the suture, and cut here half an inch from the suture, brought the two surfaces together, and took catgut No. 3 and sewed it over and over through the mucous membrane, muscle and peritoneum all around. That controlled hemorrhage. I did not use silk because I did not want it to stick in the bowel and produce irritation, and by using catgut I knew it would be absorbed in ten days. I brought the other parts together with the Lembert suture, rubbing well this part before I opened it up, denuding the peritoneum as much as I could of its epithelium, and then I knew I would get firm union, and I sewed that up. This woman remained in good health for two years, then she came back, and she had another growth, with immense distention of the abdomen with ascitic fluid, and we found then that she had a malignant growth of the ovary which I removed. I have had since that time a number of other cases, but is seems to me so simple to sew the bowel in the manner I have indicated on the blackboard. You do not need to put on any clamps; if there is much discharge you can put on clamps, but ordinarily you can bring the parts together, cut on each side, control hemorrhage, and put a ligature on the other side. You can do that by an end-to-end anastomosis or in any other kind of operation.

DR. ROLAND E. SKEEL, Cleveland.—I would like to ask Dr. Rosenthal in closing his discussion to explain in what respect the operation he has described differs from the two-clamp operation in end-to-end anastomosis of the bowel. It seems to me the bowel is opened as extensively in this operation as it is in the ordinary clamp operation.

DR. FRANCIS REDER, Saint Louis.—I am exceedingly interested in the method of Dr. Rosenthal. Some years ago I did a good deal of experimental work on the intestine, and introduced a rubber bulb for anastomosis. The operation of Dr. Rosenthal is an ingenious one and will have a place in surgery. I thought we had gotten to the end of anastomotic work, and that the whole matter now resolved itself into a simple suturing, instead of the use of a mechanical device. The method of suturing has been very much simplified since the Connell suture has given such satisfactory demonstrations. We even go so far in some cases as to omit the Lembert suture. Whether Dr. Rosenthal can get the proper approximation about the mesenteric attachment by this operation I do not know. It is sometimes an easy matter to anastomose the bowel, provided the bowel is favorable to access. Sometimes, however, the situation is such a complicated one that the surgeon encounters great difficulties in perfecting the anastomosis.

The doctor spoke of invaginating his finger into the bowel and loosening up that portion of the bowel that was crushed by the forceps. I refer to this because two weeks ago I had a patient suffering from an obstruction. The obstruction was a cancerous growth in the lower portion of the sigmoid. After

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incision I encountered much difficulty in bringing together the bowel ends on account of the depth in which I had to work. Inasmuch as it is very difficult to anastomose a collapsed bowel in the pelvis, I introduced a bobbin of soap, the size of the lumen of the bowel, in both the distal and proximal ends, and secured the bobbin by tying a ligature around the bowel. This gave me a well filled bowel and easy to handle. To prevent any shifting of the soap surfaces when in apposition, I introduced into the distal soap plug a small peg made from a sterilized toothpick, and pressed the two soap bobbins together. This gave me a stationary base so that I could introduce the sutures about the circumference of the bowel with comparative ease. After the suture line was completed, I invaginated my finger into the upper bowel and pushed the soap plug as low down as I could. It was discharged on the second day after the operation. The ligatures that secured the soap bobbins were removed as soon as the bowel had been satisfactorily sutured. Patient recovered.

DR. C. C. FREDERICK, Buffalo.—Dr. Rosenthal's series of cases has been extremely interesting, and his methods of anastomosis is very ingenious. I, however, feel very much like Dr. Carstens does, that Dr. Rosenthal will get hemorrhage in that class of cases. I have seen hemorrhage when the anastomosis of the gut has been made carefully and the mucous and submucous tissues have been whipped over. I have seen secondary hemorrhage in those cases. I presumed the question of anastomosis of stomach with intestine was such a simple mechanical process that there was no necessity for a multiplication of these various methods and of this little bit of oddity of technic in the procedure. There is not one case in ten that you cannot get the stomach or whatever part you want to anastomose up into position, you can do it easily and rapidly, and the simpler the process you follow and the quicker you can do it, the better the result. The only thing to do in making an anastomosis of the stomach with the intestine is not to spill the intestinal or stomach contents into the peritoneal cavity. If you are going to make an end-to-end anastomosis of the gut, this can be readily obviated by putting on a clamp with rubber tissue over it, and whipping the gut around through all the coats with a simple running ordinary sewing suture, and then put a Lembert around it, or if you want to make a lateral anastomosis, sewing up with 2 or 3 inches around the peritoneum, sewing the mucous and sub-mucous coats and muscularis together and continuing the Lembert suture around. That is a simple procedure. There is not one time in ten that you cannot bring the gut up in any place you want it and do it rapidly, and the only three things that you want to secure are, first, not to empty the contents of the gut into the peritoneum, second, to prevent secondary hemorrhage, and third, to make a close accurate closure, so that you will have no leakage.

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That can be done quickly and the fewer forceps and other paraphernalia you have to do with in my estimation the better.

Dr. Joseph Price, Philadelphia.—I want to be very brief in regard to two or three points. I have practised drainage of the peritoneal cavity for a number of years for loathsome and distressing symptoms associated with general intraperitoneal malignancy. I have practised drainage of enormous accumulations of fluid commonly found in advanced malignancy which threatens the life of the patient, and I have opened the peritoneal cavities of patients very freely and drained them for many months or even years. I was called in consultation just before the death of my brother to see a patient who had enormous dropsy, and when I saw her I found her abdomen enormously distended. I discouraged any interference in this case thinking the woman would only live a few hours. A few days after my brother's death they asked me to see her again. I did, and decided to drain her. Her breathing space had been reduced very considerably, and she was suffering greatly from suffocation. I opened her abdomen and got rid of an enormous accumulation of fluid. Everything in her peritoneal cavity seemed cauliflower-like and immovable. That woman got up and about and shortly after entertained the entire family at Christmas, and she lived for some time. I refer to drainage in this connection because by resorting to it we can relieve patients of much suffering and suffocation which commonly occur in these cases.

I want to make allusion to a statement by Moynihan who says that mechanical devices in anastomotic work are being put on the shelf as curiosities. Moynihan has lost sight of the history of fistula. The German surgeons have lost sight of the history of fistula. The tendency of all fistulæ due to incision is to close. You can make a fistula in almost any viscus with the knife, or scissors; if you keep it clean, it will close. If you can avoid sepsis it will close.

So far as the treatment of chronic cystitis by drainage of the bladder is concerned, it puzzles me very much how to keep a fistula open, and in spite of the chronic cystitis it will close, until we stitch the vesical and vaginal mucous membranes together. I repeat, if you make a fistula with a knife or scissors, in any viscera, if you keep it clean and aseptic, it will close, but fistula due to a slough is a different thing. Operations for the closure of fistulæ due to slough were abandoned by the profession all over the world who said they were incurable, but Sims was asked by an intelligent planter, who recognized him as a surgical genius, to try and cure a fistula in a woman in the cotton fields due to sloughing. He offered the argument that operation was a failure in the hands of surgeons, but as they insisted he made the effort and succeeded in closing it. In Europe numbers of women had fistulæ due to sloughing, but none of them closed. Sims was the first and only man in this country to attempt the closure of these fistulæ by operation. Then came Senn and Murphy, who proposed doing

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anastomosis for the purpose of closing fistulæ the result of sloughing. At the present time a well-done operation with the Murphy button is superior to all other methods. In one of our recent text-books you will find but one suture method given. Now, the surgeon who uses one suture, and that a continuous one, strangulates the tissue and causes clot necrosis. Pause and think for a moment of what a continuous suture does. It strangulates the entire circulation of the included structures, and causes a necrotic process, and gives you a leak, and in a good percentage of suture anastomoses you have a mortality that is due to leakage and due to clot necrosis. I believe at the present time we have the best results by the use of the Murphy button in doing anastomosis. In a case I had not long ago I used an aluminum button which was made for me as large as a Maryland biscuit. After an exploratory operation for appendicitis, it was discovered that the patient had malignant disease. I took out 9 inches of the ascending colon and inserted an aluminum Murpy button, and the patient made a nice recovery, and subsequently passed the button. A year later I operated on another patient and removed an epithelioma. In this case there was an hourglass contraction of the transverse colon. The operation was easier than the one done in the previous case. I took out 9 or 10 inches of the colon, and made the anastomosis with the Murphy button. A year later I took out 9 inches of the descending colon, used the same buttton, and it was many months before the button was passed. One difficulty has been that the Murphy button has been imperfectly made. The instrument maker, like a great many other artisans, gets above his business. Rarely is he willing to accept an intelligent suggestion from a surgeon. But in spite of what Moynihan says about the button being a relic of the past, I disagree with him positively from this brief history of fistula, and I would insist upon it that closure by sutures are contracting closures. In Philadelphia good numbers of patients came back for the fifth and sixth and even ninth time to have their jejunums wrestled with; but had those operations been done origionally with a good Murphy button, all of this trouble would have been obviated. The difficulty with the modern button is that it has a feeble spring, one which has not sufficient compression to cut quickly and completely, and you leave some living tissue in the compression. It ought to do its work quickly. The compression discs should be uniformly firm, but the fact that the past masters in surgery, like Murphy and others, continue to use the button and the further fact that beginners in surgery have successfully made these operations, are the best evidence that a mechanical device is not only the safest, but it minimizes the necessity of repeated operations. These are the two points I desire to make: first, that we ought to drain more in malignant cases, make the patients comfortable, and prolong their lives. It makes a nurse work hard to keep these patients clean who are being drained, but it makes them sleep better and eat more and

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live longer. Second, I want to emphasize the fact that we are not through with the use of mechanical devices in doing anastomotic work. Again, I would criticise the continuous suture and refer to it as a strangulation suture. It gives you clot necrosis, and you have in your suture methods a leakage you ought not to have. Many deaths are due to leakage. In the postmortem rooms at home and abroad you see the results of suture leakage—in Vienna as many as three in one morning.

DR. NATHAN JACOBSON, Syracuse (by invitation).—I wish to thank you for the privilege of the floor. I have been very much interested in this paper and its discussion. There are a few points to which reference has not been made in the author's paper, which strike me as requiring emphasis. One is the matter of early diagnosis. You will recall that practically all of the cases reported involved the large intestine. There is no doubt that carcinoma invades the large more frequently than it does the small intestine. The manifestations differ materially according to the section affected. When the cancer is located in the sigmoid flexure close to the pelvic floor, its early recognition is often difficult. You cannot always introduce a sigmoidoscope for the purpose of making an inspection, and even when you do there may be profuse bleeding. I have found that if a patient be examined in the recumbent posture, with the thighs flexed tightly upon the abdomen, the index finger can be carried up the rectum so high as almost to reach the sigmoid. A carcinoma or a tumor in this location can thus be frequently discovered. Characteristic symptoms are by no means constant, as the further from the stomach the cancer is located the later will such symptoms as vomiting occur. Sometimes there is no vomiting until the patient is near his end. I recall the case of a carcinoma of the descending colon occurring in a man seventy-five years of age, who worked on his farm until the day he died and even milked his cows that morning. I was called to operate on him for the relief of the existing obstruction. I found that he had died before I arrived. An autopsy was permitted and it disclosed a carcinoma which encircled the descending colon and occluded it so completely that I was unable to pass a lead pencil through it, and yet that man had continued to do his work and care for two maiden sisters who lived with him until the day of his death. On the other hand, with a carcinoma affecting the small intestines the obstructive manifestations may appear quite as suddenly and unexpectedly. Not infrequently we find as the first evidence of carcinoma of the small intestine an acute intestinal obstruction. In such cases the mass has produced a twist and has suddenly occluded the small intestine.

It has been my fortune to have seen many cases of carcinoma of the lower part of the large intestine. I had occasion to read a paper within a year in which I reported twenty cases of carcinoma of the rectum removed by excision. I have seen carcinoma in the sigmoid frequently. There is one thing I want to emphasize

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and that is my opposition to the establishment of an artificial anus. I cannot imagine a more filthy, unsurgical or more unsatisfactory procedure than to attempt to meet the situation in these cases by the creation of an artificial anus; nor have I found it helpful as a preliminary step to a radical operation.

One statement made this afternoon I can certainly endorse—namely, that much depends upon the location of the carcinoma as to the success of a surgical procedure.

In January last it was my privilege to operate on a woman, forty years of age, who had a large carcinoma of the descending colon. We were able to bring the involved area entirely out through a small abdominal incision and complete the resection of the bowel as an extra abdominal procedure. Her condition was extreme due to the exhausting manifestations attending the disease. However, the removal of the growth was completely accomplished. She has enjoyed excellent health since. On the other hand, if the carcinoma be located at one of the flexures, especially if it be the hepatic flexure, its removal is much more difficult than when the disease is situated in a more mobile portion of the intestinal tract. The procedure of short-circuting the bowel preferably by suture or even by button and relieving the obstruction for the time being is vastly better surgical practice, it seems to me, than the establishment of an artificial anus.

I know we all esteem the opinion of the last speaker, Dr. Price. His standing in the profession is high, and every word that falls from his lips deserves the most careful consideration and yet his vews do not represent those of the majority of the profession to-day as to the use of the Murphy button or the other mechanical appliances. It seems to me, the statement that necrosis is apt to follow the use of the continuous suture is to be questioned. There is no doubt that in an end-to-end anastomosis by the careless application of a continuous suture marked constriction of the lumen could be produced. But one need not use the continuous suture all the way around. One quarter or even one-sixth of the lumen can be sutured and tied and so on until the entire circumference has been cared for. In this way no constriction of the gut results.

This subject is a very wide one, and one I am sure that is most interesting and important. The statement made by one of the speakers, Dr. Carstens, that marked loss of weight, with obscure abdominal symptoms demands thorough investigation and justifies abdominal exploration is one which I most heartily endorse.

Dr. Louis Frank, Louisville.—There is just a question or two I would like to ask the author of this paper. There is some danger, it seems to me, connected with this modified method of anastomosis, as the doctor has practised it, and that is the danger of hemorrhage. Secondly, it seems to me there would be great difficulty in controlling and suturing that part of the bowel, the fatal angle, that is the mesenteric angle,

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from which we have so frequently leakage which causes the death of the patient. I would like to ask him how he overcomes this by his method. It seems to me it must be a difficult matter to do so. A third point I want to bring out is this, that the pictures show a different condition as compared with what we really have to deal with in anastomosing the distended gut above the point of obstruction, with the collapsed bowel below. These sketches are not true to life as representing what we have in such a condition.

DR. ROSENTHAL (closing the discussion).—So far as the technic of this operation is concerned, there is nothing new in the suture. You unite the bowel by the same old suture method with which you united the bowel away back in the history of bowel suture. This forceps method adds nothing new, nor does it take away anything whatever from the earlier methods of anastomosis, except that you secure the anastomosis with an aseptic field and in a throughly aseptic manner. I think I made it clear that carbolic acid cauterization was for the purpose of maintaining asepsis. You wipe off the ends as you do the appendix before you turn it down. The carbolic acid does not control hemorrhage. You have met every required condition in bowel anastomosis that any other operation will meet, and so far as hemorrhage is concerned, in addition to every other safeguard you have the crushing of the ends of the bowel. When necessary, you carry the suture down so that the first layer of sutures controls the hemorrhage. That is only surgery *lege artem*. I did not step out of my way to mention it because I did not think it was necessary to do so. We expect you to do that. The first layer of sutures should control hemorrhage; you rotate the forceps and put on the ordinary Lembert suture. So far as hemorrhage is concerned, you have observed every requirement which is given you by any other suture method, and in addition thereto you are crushing the ends of the bowel.

Dr. Price tells us that we get pressure necrosis with the continuous suture, and that we do not get pressure necrosis with the Murphy button because the spring is tight enough. You want necrosis, so far as the button is concerned, that is what releases the button.

Dr. Reder mentioned his experience in experimental bowel suture work, and spoke of securing the mesenteric border. You can take a bowel after it has been anastomosed by my method, a piece of bowel 3 or 4 feet long, you can fill such a bowel after this anastomosis with blue water, and hold it up, and it will not leak. I showed you a photograph wherein I am compressing two limbs of the anastomosis in an effort to expel the gas.

DR. FRANK.—How soon after the anastomosis?

DR. ROSENTHAL.—Immediately. The more pressure you have on the inside the tighter it closes.

Dr. Reder asked how we secure an astomosis of the mesenteric

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border. I mentioned that in my paper. You must grasp the bowel quite up to, but not into the mesentery, and then meet the conditions absolutely as they do in ordinary bowel suture. I can demonstrate that to the doctor's satisfaction.

So far as mechanical devices are concerned, as Dr. Reder's experiments with a soap plug, let us take the Murphy button. It is an excellent device for making an anastomosis in the large bowel. The rapidity with which you can do it has saved a number of these cases, but that same Murphy button that probably saved the lives of those patients, whose cases I have reported, was only kept from killing those patients by the careful after-treatment which consisted of inserting a self-retaining rectal tube and keeping water flowing into the bowel, to keep the button open, the bag being suspended 6 inches above the patient. This method which I have described secures every advantage of these mechanical devices and has the additional advantage that the mechanical aid, the forceps, is removed with the completion of the operation. These people demand immediate relief. They have distended bowels which become necrotic, and you must have the passage of gas then and there. These people's bowels must be moved. In these cases of obstruction the obstruction comes on late, and yet this may be the first symptom of the cancer of the bowel. They come to us primarily for the relief of the obstruction, and we must make an anastomosis that will remain patent and will not close up within the first few hours. I felt the want of something of this kind in dealing with this class of cases. I tried the O'Hara instrument. He presses two forceps together and unites the bowel around the forceps. That is all right, but the grasp of the forceps is not sufficent, the bowel is likely to slip out of the forceps, and that would be a calamity. When you put a Murphy button in the open bowel or cut into it there is danger of soiling. Fistula is more likely to be the result of infection than the result of the insecure suture, or the method employed. -You cannot handle the inside of the bowel, or manipulate the open bowel, unless you run a great risk of at least common colon infection. This method has its advantages. I have used it in doing jejunostomy, and it is beautiful in gastroenterostomy where you want to unite the two limbs of the jejunum to prevent regurgitation of bile into the stomach, or where you do the long anterior operation of Kocher, you can do it in a few minutes, and it is really beautiful to see how nice it works. As regards the use of catgut in bowel suture, if you use catgut in bowel work, outside of the serous layer, you will have trouble. These cases are cases of obstruction due to malignant growth and do not represent my experience in a series of cases of simple obstruction of the bowel, nor do they represent a series of cases of cancer of the bowel. Only those cases of cancer which produced obstruction. I have come with a sufficiently large experience in this class of cases to warrant me in discussing the subject and bringing it before you.

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DIAGNOSIS OF TUBAL ABORTION AND RUPTURE.

BY

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It was formerly held that the common termination of a tubal pregnancy was by rupture. Indeed, tubal abortion was first described by Werth as late as 1887. Schrenck, in 1892, noted abortion only eight times in 610 cases collected from the literature. On the other hand, in 289 cases reported by Martin, Orthmann, Mandel, and Schmidt, Fehling and Gletsch, 78 per cent. ended by abortion and 22 per cent. by rupture. Martin, therefore, considers tubal abortion to be the rule(see William's article in Kelly and Noble's "Gynecology and Abdominal Surgery").

My own impression is that rupture is more frequent but it must be confessed that, in the early work, inspection was not carefully practised nor with the same scientific basis, since it was taken for granted that the embryo was discharged into the abdominal cavity in practically all cases except those in which it entered the broad ligament.

Some writers would lead one to believe that the differential diagnosis between tubal abortion and rupture is easy and that one should operate only on cases of rupture. A little reflection, however, will convince one that the differentiation between these conditions, even with the abdomen open, depends largely on the personal equation. Theoretically, we may distinguish sharply between a rupture of the tubal wall with open vessels and the expulsion of the embryo through the free end of the Fallopian tube—the former a menace to life, the other resulting merely in the presence of sterile absorbable organic material. Practically, tubal abortion is by no means a simple extrusion through a dilatable orifice. As in the case of ordinary uterine abortion, it is frequently accompanied by massive hemorrhage, a statement based on actual personal experience. Conversely, I have operated on cases in which the embryo had escaped

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through a tube ruptured at a distance from the fimbriated extremity, but with comparatively little hemorrhage.

Thus, while it is interesting from the pathologic standpoint to discriminate between tubal abortion and rupture, it should clearly be recognized 1. that statistics as to the relative frequency of these conditions, based on inspection at operation, often necessarily made hastily, cannot be accurate; 2. that differential diagnosis prior to operation it impossible; 3. that even if the differentiation could be made, it would not be a safe criterion of the advisability or inadvisability of operative interference. Practically, the main points to determine are the presence or absence of an appreciable hemorrhage into the abdomen and its source. Hence no attempt will be made in the further discussion to distinguish between tubal abortion and rupture.

The signs and symptoms of tubal pregnancy may be divided into three periods—namely, before, at the time of, and after the displacement of the embryo from the tube. A great many papers have been written on this subject but, unfortunately, too many authors have discussed it from an academic standpoint and have made statements based on inadequate *a priori* premises, which subsequent experience has shown to be incorrect. There may be mentioned, for instance, the dictum that some inflammatory change, especially gonococcic infection, predisposed to tubal pregnancy by robbing the tube of its cilia, whereas, in my experience, a fairly normal condition of the tube seems prerequisite to the development of the ovum within it. With more direct reference to diagnosis may be cited the former teaching that tubal abortion was extremely rare, and the present swing of the pendulum to the opposite extreme with the attempt to exclude abortive cases from the category of those requiring operative interference. Every operator knows that the great majority of cases reach him with the diagnosis incorrectly made. This fact is due, I believe, not to the incompetence of the general practitioner but the the faulty and unpractical teaching which he has received from supposed experts.

The diagnosis may be somewhat simplified by keeping clearly in mind certain general principles. For practical purposes we may consider ectopic pregnancy as always tubal. Ovarian pregnancy was not positively demonstrated until the case of Dr. Katharine Van Tussenbroeck, of Amsterdan, in 1899, Auning and Littlewood confirming her report in 1901 by a specimen presented to the London Obstetric Society. Since

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then a very few other indubitable cases have been encountered. The interstitial type either becomes a uterine pregnancy or it has the same tendencies and requires the same management at tubal pregnancy.

It is conceded that the great majority of cases of tubal pregnancy rupture or abort by the twelfth or fourteenth week, thus pretty definitely limiting the first period and often enabling us to make a very simple exclusive diagnosis. Rupture occurs, on the average, earlier than abortion. Rupture may be sudden or gradual, complete or incomplete. When sudden it is practically instantaneous. The term complete indicates the discharge of the entire embryo, including the placenta. The term incomplete means not that the rupture has not penetrated the walls of the tube, but that all or some parts of the products of conception remain inside. The same general principles of classification apply also to tubal abortion as well as to ordinary uterine abortion.

Rupture may take place either into the abdominal cavity or into the broad ligament. The former is the more common and the more dangerous form. After rupture into the broad ligament there may be a secondary rupture into the abdominal cavity, constituting the so-called abdominal pregnancy, or, if no such secondary rupture occurs, an entirely different group of cases is developed from those requiring emergent diagnosis and immediate surgical intervention—namely, the group of ectopic gestation continuing to the viability of the fetus, of lithopedion, of suppurating cysts discharging into the bladder, bowel, and the like.

DIAGNOSIS PRIOR TO RUPTURE.

It is a truism that the diagnosis of ectopic pregnancy in the first period is included in the diagnosis of pregnancy in general and, with rare exceptions, covers the first three or three and a half lunar months, when the greatest diagnostic difficulties are encountered. As Sutton and Giles ("Diseases of Women") have shown from a careful analysis of a large series of cases, ectopic gestation is most apt to occur in women who have been childless for a number of years but, contrary to the prevailing opinion, it is not especially likely to occur in those with serious tubal disease or, indeed, in those who have had serious pelvic diseases of any kind. Hence it develops par excellence in women least

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likely to be under gynecologic observation to pay attention to warning symptoms or even to remember the dates of their menstruation. Mammary signs, uterine enlargement, morning sickness, discoloration of vulva and vagina, softening of the cervix, thyroid swelling, skipping of menses, severally or combined, though liable to fallacies in both directions, are very significant in young women just beginning their sexual life but, for one reason or another, less significant and more apt to be misleading in the class of cases under discussion.

Even when the various signs and symptoms of pregnancy are fairly clear it is often impossible, especially in parous women, to determine whether the uterus does or does not contain the ovum; at an early stage of pregnancy and, while the disclosure by bimanual palpitation of a sensitive and swollen tube would naturally suggest ectopic pregnancy, even this condition may be misleading, as has often been demonstrated by operation. Indeed, I believe that the diagnosis of ectopic gestation, when made in what was supposed to be the first stage, has usually proved to be erroneous, operation disclosing some inflammatory condition of the tube or ovary, an ovarian cyst or fibroid tumor with twisted pedicle, appendicitis, or even a normal gravid uterus with no obvious explanation of the symptoms leading to the diagnosis of ectopic gestation.

Bazy (*Rev. de Gyn.*, Paris, July, 1910) mentions a condition which may still further complicate the diagnosis. This condition he terms hemorrhagic pachysalpingitis and cites three positive and two somewhat doubtful cases. One of his observations is appropriate to what has been said regarding the incorrectness of the old view that some form of salpingitis predisposed to tubal pregnancy, though it cannot be claimed to be more than suggestive. One of his cases of hemorrhagic salpingitis was found to be complicated with tubal pregnancy involving the opposite and otherwise normal tube.

DIAGNOSIS AT THE TIME OF RUPTURE.

The second stage is marked by pain which is characteristic to the degree that its absence would pretty positively exclude extrusion of the embryo either by rupture or tubal abortion, and that the pain is usually sudden and severe. But, unfortunately, so far as can be judged from the statements of patients, the pain is of the same character and subject to the same varia-

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tions as in all sorts of other obdominal conditions, such as various tumors with twisted pedicle, inflammatory conditions of the pelvic organs, appendix and biliary passages, troublesome hernia of various kinds, and the like.

Uterine hemorrhage approximating in amount that from an ordinary three months' abortion and appearing within twenty-four hours after the critical pain is also diagnostic to the same degree and with the further qualification that both pain and uterine flow are compatible with an ordinary uterine abortion. While ectopic gestation is necessarily accompanied by the formation of a uterine decidua, that is not necessarily spontaneously discharged, and, on the other hand, it may be discharged and may escape from the vagina and be thrown away very early, so that its absence does not warrant us excluding etopic gestation, though, if found, it obviously constitutes fairly conclusive evidence of pregnancy somewhere.

Pain and hemorrhage are absent in about 6 per cent. of cases of ruptured or aborted tubal pregnancy.

With the greater or less aid of diagnostic signs and symptoms of pregnancy in general, or of rather unreliable signs pointing to ectopic pregnancy in particular, the diagnosis of tubal abortion or rupture must depend upon the sudden onset of pain, collapse, characteristic symptoms of internal hemorrhage which, as stated, may not be present, the appearance of uterine hemorrhage within twenty-four hours and absence of the embryo and the presence of a decidua in the uterine discharge subject to the negative qualifications just stated.

To illustrate the diagnostic importance of uterine hemorrhage within the time-limit of twenty-four hours the following case is cited:

Mrs. H., aged thirty-one, born in U. S., German, married eleven years, never pregnant. Two years ago had a flow for a few days more than normal, but at a regular menstrual period. She was not examined but "took medicine" for a couple of days and has had no further trouble until the present. She never even had pain during menstruation and the menses were regular and normal in every way.

Saturday, August 6, while on a boat she became indisposed. In stepping off the boat she felt very severe, sudden pain and collapsed. She received no medical attention at the time, but ordinary restoratives were administered and she was taken home as soon as possible and was put to bed. Immediately

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she felt so comfortable that it was considered unnecessary to summon a physician, but on account of a rather vague persistent distress one was called on the following Thursday, August 11. On examination he found a distended, swollen abdomen, the uterus about normally placed, but a mass to the left extending down into the culdesac. She was not flowing at this time. He was convinced that it was a case of ectopic pregnancy with rupture and brought her to the hospital the following day. At this time there was quite a copious, dark uterine hemorrhage without clots. The abdominal distention, sensitiveness, and pain had markedly increased. The temperature and pulse were moderately elevated 100.4 and 110, respectively. On account of the delay in the uterine flow and the normal position of the uterus I was convinced that the case was not one of ectopic gestation, but a tumor, either ovarian or fibroid of the uterus, with a twisted pedicle. The suddenness of onset would practically exclude the various inflammatory conditions mentioned. The tenderness was too diffuse for appendicitis or any analogous focal lesion. On operation the case proved to be one of ovarian cyst with twisted pedicle. The subsequent progress was uneventful.

In contrast to the foregoing, the following case of ruptured tubal pregnancy may be cited:

Mrs. L., aged nineteen, mother of one child, two miscarriages prior to the immediate case history. A little more than seven weeks previously she passed a few days over the menstrual period and, not wishing to continue the pregnancy, she visited some one who passed instruments and a few days later she had pain and began to flow. At the end of a week of continuous flowing she was cureted. Then, for about five weeks longer, she was treated for pelvic inflammation. This brings the history down to April 15, 1910, when she summoned Dr. Hugh S. Townsend who immediately called me in consultation. Clots could be palpated in the culdesac and this sign, in connection with the history, led to the diagnosis of ectopic pregnancy, while the lack of violent symptoms, in accordance with the rules for differentiation laid down by some authorities, favored the differential diagnosis of tubal abortion. The culdesac was opened, the clots were removed, and a gauze drain was inserted. During the following night the patient had terrific pain, requiring several hypodermics of morphine. There was also a profuse hemorrhage. The next morning I opened the abdomen, found the

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right tube ruptured at the isthmus, and blood issuing from the site of rupture. The tube was removed, the toilet made, and the patient made a perfect recovery.

Obviously, in many instances, a positive diagnosis cannot be made, but, from the practical standpoint, we must be content with probabilities sufficient to lead to prompt operation. As stated and illustrated by the case just cited, I do not believe that it is possible to distinguish between tubal abortion and rupture, nor to locate at all exactly the site of rupture.

It is also inevitable that, when rupture occurs early, with a small ovum, relatively undeveloped bloodvessels in the wall of the tube, or when the ovum is extruded through a patulous ampulla, diagnostic symptoms may be lacking. The patient will believe that she has taken cold or that an early uterine abortion is in progress or merely that she is having a somewhat painful menstruation. Doubtless many such cases pass without operation and, the internal hemorrhage not being of serious amount, complete abortion occurs. It is important, however, that the general practitioner, who is most apt to see such cases at the critical period, should have in mind the possibilities and should either demand operation as a precautionary measure or, at least, should carefully watch the further progress in order to guard against the danger of an undetected dribbling hemorrhage or a subsequent exacerbation. Sometimes the patient does not call a physician at all or only after the lapse of days or even weeks when, with the vague history due to inadequate opportunities for observation, still further delay ensues before radical relief is afforded.

DIGANOSIS AFTER RUPTURE OR TUBAL ABORTION.

As already intimated, the history, while by no means to be neglected, may be vague and, in most cases, it has not the significance in many details formerly ascribed.

With the accumulation of blood in the abdomen, the hemorrhage being usually rather gradual, the uterus, unless held in place by adhesions due to a new growth or to a previous inflammatory condition, is lifted bodily upward and forward until, in some cases, the examining finger must pass around the symphysis to find the cervix. I know of no other condition with a comparable history and course which causes this condition. So long as the blood remains liquid nothing can be felt in the cul-

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desac, but after clots have formed a palpable mass is encountered and the vagina may be nearly obliterated. I have noticed this condition as early as forty-eight hours after the critical pain, but in the case of a slow, dribbling hemorrhage it may be postponed even for two or three weeks.

From reading the literature I am convinced that some authors fail to recognize the importance of a clear distinction of stages as already laid down. For instance, one writer states that twenty-nine out of thirty cases present symptoms by which a presumptive diagnosis may be made prior to the patient's arriving at a crisis which is alarming. This expression ought to indicate the occurrence of rupture or tubal abortion. Yet, a little farther on in the same paper, he says "I do not believe that I have ever chanced to examine bimanually a pregnant tube before any symptoms of the tragic stage have manifested themselves."

Similarly, another author claims that 95 per cent. of cases should be diagnosticated before rupture and then cites cases under the heading "before rupture" in which he has operated immediately after the appearance of pain, shock, and the like and has found the abdomen filled with blood. Obviously, he has failed to distinguish sharply between the stages.

I scarcely need emphasize the fact that the third stage should be anticipated by prompt operation so that, whether the process involves the wall of the tube or the ampulla, the repetition of hemorrhage and the increasing danger of laceration of the tube should be prevented. Here we have a very practical reason for distinguishing between a second stage immediately at or closely following the extrusion or attempt at extrusion of the embryo and a third stage following this process by an appreciable interval. Obviously, the greater the abdominal hemorrhage the longer will the lessened blood pressure delay the appearance of the uterine flow. So, too, the more diffusely the intraabdominal blood is spread over and between the coils of intestine, the less will be the chance of palpating clots in the culdesac. Hence, while theoretically the second stage might be considered to occupy a mere point of time, the distinction of stages as described is important both diagnostically and from the vitally important standpoint of prophylaxis of comparatively late developments. Hematocele, when diffuse or solitary, is a favorable termination of ectopic pregnancy for, even if left alone, it is gradually absorbed, and complete recovery results. Thorn, for example,

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has reported 157 cases with a single death—equivalent to about 0.6 per cent.—and Fehling ninety-one cases with no death.

The general indication for operative interference as promptly as possible cannot, however, be gainsaid. Schauta, for example, after a careful study of the literature, collected 123 operative cases, with a mortality of 5.7 per cent. and 121 cases treated palliatively, with a mortality of 86.89 per cent., although in another series of more carefully selected cases, he found the mortality by palliative treatment to be only 65 per cent.

To recapitulate the diagnostic features: 1. There is sudden pain nearly always, the exceptional cases being those with sudden collapse, as in two cases which I reported at the Keuka Lake Medical Association, July, 1909.

2. Uterine hemorrhage occurs within forty-eight hours after the initial pain. This symptom and sign is common to all cases of ruptures or aborted tubal pregnancy.

3. Add collapse and the diagnosis is complete. If collapse is lacking, or slightly marked, it is on account of gradual internal hemorrhage, when, on examination, the culdesac will show a progressive bulging.

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RESULTS AT LEBANON HOSPITAL OF DEFERRED OPERATIONS FOR EXTRAUTERINE PREGNANCY.

BY

RALPH WALDO, M. D.,

New York.

By deferred operation for extrauterine pregnancy we mean that when a patient is brought into Lebanon Hospital in profound shock the operation is deferred until her condition is markedly improved, which is usually from one to three or four days. The historian of the hospital, Dr. M. L. Bookman, reports eighty-one cases, about 70 per cent. of which were brought into the hospital in profound shock. Out of this number three died. One had been operated on and was making a perfectly good convalescence, then suddenly died of pulmonary embolism. Two were brought into the hospital in profound shock and shortly died, no operation having been performed. The diagnosis of extrauterine pregnancy was invariably confirmed, either by operation or postmortem examination. If there is no shock, or it is only slight in character, the patient is always operated on as soon as possible after admittance to the hospital.

In a number of instances it has been noticed that patients who had suffered from profound shock had much less free blood in their abdominal cavities than those who had very little or no shock. This has led me to believe that the shock is not entirely due to the escape of blood from the vessels but, in part at least, to a nervous influence produced by the sudden escape of blood into the peritoneal cavity, causing dilatation of the general arterial system, and so reducing the blood pressure to a dangerous point.

There are many recorded instances where a blow over the pit of the stomach, especially when the digestive processes are active, as is the case shortly after a full meal, has resulted fatally, and on postmortem examination there has been no anatomical lesion to account for death. In military and railroad surgery capital

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operations immediately following the receipt of the injury, before reaction has set in, have resulted most disastrously. During the early part of the Civil War it was customary to do a large amount of amputating on the field, but the results were so bad that the surgeon-general's office issued an order prohibiting this practice as far as possible.

Ovarian pregnancy is possible, but it is so extremely rare that, from a clinical standpoint, tubal pregnancy and extrauterine pregnancy are synonymous. In the lower animals it is generally believed that the ovum is impregnated in the tube, and the probabilities are that in the human race the same thing takes place in a large percentage of cases, and if from some anatomical defect in the tube or its lining the arrest of the impregnated ovum is caused, tubal pregnancy results. Probably in from 5 to 10 per cent. of tubal pregnancies tubal abortion takes place, usually of an embryo that has previously perished, and you have a succession of hemorrhages from the fimbriated end of the tube. These hemorrhages may be slight, and the tube may eventually empty itself and recovery take place. In a few instances a living embryo is expelled into the abdominal cavity, and a sufficient placental attachment remains to nourish the embryo which in rare instances reaches maturity.

In from 90 to 95 per cent. of tubal pregnancies probably the above does not take place, and the impregnated ovum develops in some portion of the tube; and at Lebanon hospital we have noticed that the symptoms develop at an earlier date in the pregnancy and are usually more sudden in advent when the pregnancy is near the uterine end of the tube, the worst type being when it develops in the tube where it passes through the wall of the uterus—the interstitial variety.

After a most careful investigation it seems to us that the first symptoms show themselves between the third and sixth week of pregnancy. In many instances neither the patient nor her friends have the slightest knowledge that anything is wrong until there is severe pain followed by collapse. There are a few instances where the first symptoms of extrauterine pregnancy do not show themselves until the expiration of two to three months. The question of the time of pregnancy in all of these cases is obscure, especially in the class of people that we come in contact with in hospital practice, many of them paying little attention to their complaints until severe illness is developed. It is not an uncommon thing for patients suffering from tubal

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pregnancy to menstruate, and the slight irregularities which are almost invariably present during the early part of extrauterine pregnancy are paid little attention to, especially in women who are subject to more or less irregular menstrual flow.

Another class of patients have given birth to a child or had an abortion and have become pregnant before the menses have been established. We have had a number of cases of extrauterine pregnancy in this class, and the first show of blood, which was due to the ectopic, has been believed by the patient to simply be the normal return of menstrual flow after its cessation following the gravid state. This fact and the fact that in many instances the return symptoms of tubal pregnancy are very slight and, in the experience of the patients, very rare has led away from the true diagnosis of the condition, and over half of the patients suffering from extrauterine pregnancy admitted to Lebanon Hospital believe that they are suffering from some other malady, especially incomplete abortion and appendicitis.

The following case very nicely illustrates the above fact, and also the condition of many of the patients we are called upon to treat.

Mrs. A. R. was admitted to the general surgical department January 25, 1910, with a diagnosis of appendicitis, her chief complaint being severe abdominal pain and marked prostration.

I was requested to see her in the afternoon of the same day, and found her in collapse, with a distended and tympanitic abdomen, temperature 101, pulse very weak and rapid. She was restless, anxious, extremely pale. There was a mitral systolic murmur at the apex, transmitted to the left; also a systolic murmur at the aortic valve; otherwise the heart sounds were good. Blood count showed red blood corpuscles 3,250,000; hemoglobin, 70 per cent.; white blood count, 20,000. Differential count: polynuclears, 87 per cent.; large mononuclears, 9 per cent.; lymphocytes, 4 per cent. The abdominal distention was much more marked than is usually the case in extrauterine pregnancy. The attending surgeon, Dr. Parker Syms, saw the case with me, and said that, while he was in favor of opening the abdomen in severe intraabdominal conditions, in this instance was thoroughly convinced that the patient's condition was so bad that she would not survive an operation of any kind. She was given a small amount of morphine hypodermically, and a pint of saline at 110° F. by the rectum. After this first enema she was given 8 ounces of saline every four hours.

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The following day her condition had slightly improved, and two days following her admittance to the hospital her condition had so markedly improved that the house surgeon was very much surprised when I told him that we would open the abdomen. An ordinary median incision was made, and it was found that the distention of the abdomen was in the main due to gas in the intestine, and though this patient had been in very profound shock, it was found that there was much less blood in the abdominal cavity than is ordinarily the case in extrauterine pregnancy. In this instance there were no evidences of previous intraabdominal hemorrhages having taken place. The pregnancy was in the right Fallopian tube, about 1/4 of an inch from the horn of the uterus, and was of the type that in our experience has been associated with marked shock. The tube was removed, leaving the ovary in place. The abdominal wound was closed after the ordinary method. The entire operation required seventeen minutes. She made an uneventful recovery.

The treatment of this disease has been through several stages of development. Formerly the diagnosis was rarely made. When it was, and it was uncertain, there were many who strongly advocated killing the embryo by injecting material (usually morphine) into the sac, or by use of an electric current. Numerous cases were reported where this treatment was instituted, and the embryo was supposed to become absorbed. Results following this method were so unsatisfactory that it was abandoned, and the treatment that is usually followed to-day has been gradually established; that is, to operate on the patient and remove the offending part as soon as the diagnosis is made. Of course, if rupture has not taken place, or if there have only been slight ones, with very little shock, this is ideal and many times the operation can be performed through the vagina which, in my belief, is a much more dangerous operation than where abdominal section is resorted to.

Unfortunately, in many instances the first time we see the patient she is in profound shock, with a very weak or imperceptible radial pulse, and I am thoroughly convinced that this is not the proper time to open the abdominal cavity, either from above or below. At Lebanon hospital we elevate the foot of the bed to prevent the patient from dying from cerebral anemia, and give a hot (110° F.) enema of a pint of normal saline. In extreme cases saline is given once in the cellular tissue under the mammæ, in addition to the enemata. If the temperature is

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above normal, an ice-bag is applied to the lower portion of the abdomen; otherwise not. No cardiac stimulants are given, fearing that they might cause a clot to be washed away that may possibly be forming in a ruptured vessel. The saline enemata are given every four hours, usually 8 ounces at a time, and as the patient improves the interval is lengthened to six hours. If, as is frequently the case, these patients are extremely nervous and restless or are suffering from severe pain, small amounts of morphine are given hypodermically, for it is believed that absolute quiet is essential in all of these cases.

We have many patients brought into the hospital in a very desperate condition, and out of the eighty-one cases that I have referred to above there have been but three deaths. It was thought that two of these patients would die in the ambulance. They were freely stimulated and reached the hospital moribund. At no time after reaching the hospital would they have stood an anesthetic or the slightest operation. Autopsies proved the diagnosis of ruptured extrauterine to be correct. The third patient who died was one of those unfortunate cases that are occasionally met with by all surgeons, where the patient was making an absolutely normal convalescence, when she suddenly died from pulmonary embolism. Seventy-eight other cases were operated on by the abdominal route and recovered.

After a severe hemorrhage another does not take place in less than from a week to ten days. In from two to seven days, depending upon the condition, the abdomen is opened from above. The clots and free blood are rapidly removed with the hand and dry gauze sponges, but the abdominal cavity is never irrigated. Formerly, where the patient had lost a large amount of blood, we put a quart or two of normal saline solution in the abdominal cavity, and left it there to be absorbed. More recently this saline has been given in rare instances in the cellular tissue by hypodermoclysis, or more frequently in the rectum. In one instance only in the above cases was the abdomen drained; in all others it was closed. The entire operation requires from eight to twenty minutes. I prefer the abdominal route, because the operation can be performed much quicker, and when the mass is high up and the vagina small, much better. It might be well for me to state in this connection that I perform many operations on the tubes and ovaries through the vagina. So you can readily see that I am not prejudiced in favor of the abdominal route.

In a recent article Elliot said that in the Massachusetts General

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Hospital all of the deaths due to extrauterine pregnancy were in those cases that were operated on while the patient was in extreme shock. At one time, as I thought, shock was due entirely to the loss of blood, but I have operated where the symptoms were very severe, and found a comparatively small amount of blood had escaped from the ruptured vessel, and in other cases, where the symptoms were less marked, have found the abdominal cavity filled with blood. In the main, the symptoms are those of shock, due to the sudden escape of blood into the abdominal cavity. During severe shock from any cause patients seldom stand operations well.

DISCUSSION ON THE PAPERS OF DRS. CONGDON AND WALDO.

DR. LEWIS F. SMEAD, Toledo.—Mr. President: A patient was brought to me with a diagnosis of ectopic pregnancy. She was twenty-five years of age, in her second pregnancy, her first pregnancy having been taken care of by the physician who brought her to me. In this first pregnancy there were no symptoms of any kind that were abnormal. The history of the case was this: for two or three days there had been a slight pain in the right side, and during the night preceding the day on which I saw her there had been a slight flow. There was no tenderness in the abdomen, and on vaginal examination I found a slight mass over the right cornu of the uterus which gave pain on pressure. The question with me was, was it ectopic pregnancy? The things I considered were these: tubal pregnancy, with slight rupture into the broad ligament; interstitial pregnancy in the cornu, and thirdly, I considered the possibility of the simple development of the placenta in the right horn of the uterus. The uterus was fully as large as it should be at about three months. As the examination was quite satisfactory, her abdominal muscles being quite relaxed, I decided that the case was one of threatened abortion with the placenta in the right corner of the uterus, and I decided to treat the case accordingly as I was not anxious to open the abdomen in the normal pregnancy, nor overlook an interstitial pregnancy in the cornu of the uterus. This was two months ago, the symptoms have disappeared, and apparently a normal pregnancy is progressing.

DR. H. W. LONGYEAR, Detroit.—This matter of deferred operation in extrauterine pregnancy in the presence of shock has been threshed out in this association several times, and if I remember rightly, the consensus of opinion has been decidely in favor of immediate operation. It is my own opinion that operation should be done in these cases even in the presence of extreme shock. I know of no other class of cases in which we would wait in the presence of hemorrhage for shock to cease.

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We operate primarily for the stoppage of the hemorrhage, and it seems to me that to wait for the shock to cease in some cases would be fatal. I have followed the rule of operating immediately regardless of shock, supporting the patient with salt solution introduced both by rectum and under the skin, and, following the operation, filling the peritoneal cavity with it, before closing the abdomen. I have seen these patients leave the table in a very much better condition than they went on by so doing, and I believe my experience will coincide with most operators. I believe these patients in extreme shock will be put in a better condition by immediate operation, provided efficient methods of supplying blood pressure are used, coincident with operation

DR. J. H. CARSTENS, Detroit.—I think Dr. Longyear has struck the keynote. If you have a hemorrhage from a leg that has been cut off you do not wait for shock to stop, but you at once go to work and try to stop the hemorrhage. Now, my friend from Buffalo (Dr. Congdon) is very pessimistic in his paper, and I will say that I do not agree with him. I hold that there is no trouble at all in making a diagnosis of ectopic pregnancy, particularly for us, and the general practitioner can also make it, and if we are going to preach the doctrine of difficulty in making a diagnosis in these cases we will go back to where we were twenty years ago. It is not difficult to make the diagnosis. Everybody ought to make a diagnosis every time, that is, except once in twenty-five times, and then he may make a mistake, and if any general practitioner in the treatment of all cases as they come along, one after another, such as pneumonia, typhoid fever, and everything else, only makes one mistake in twenty-five, he is a pretty good man. (Applause.) When you have a woman who has trouble in the pelvis, if she has no temperature, that cannot be a pus tube or inflammation or anything of that kind, can it? Certainly not. It is as plain as daylight. There is no inflammation. If that woman has a fibroid tumor she menstruates regularly, doesn't she? If she has an ovarian tumor she menstruates regularly. If she has any disturbance of menstruation, and not one in one hundred will, you can exclude all these tumors and all inflammatory conditions. But here comes a woman who has skipped her menstruation two or three weeks, and she has no fever. She has some trouble. She feels there is something wrong. This was beautifully illustrated in a case I had not long ago. A young woman came to me and said I have got some trouble. She was twenty-four years of age; had been married four years, and ran over one week so far as the menses were concerned. She had pain. I examined her and said, My dear girl, you have an extrauterine pregnancy. You have to go to the hospital right away. She replied, "I will telegraph to my father who is a physician." When she was taken to the hospital she was seemingly perfectly well. I was to operate on her the next morning at 10 o'clock, but at 9 o'clock the girl suddenly went

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into collapse, and I was telephoned to come at once. There was the father expecting to have the operation done at 10 o'clock. She was pulseless. Did I wait for shock to be overcome? Not at all. I said, we will operate on this patient at once. I opened her up, and she was full of blood. I removed the tube, washed it out, flushed the abdomen thoroughly, and the woman recovered.

Two months ago I was called to see a woman who had inflammation. Her doctor said she had a pus tube and abscesses in the abdomen. I went over to the hospital and examined her and got a history of the case and I said to the doctor, I will tell you what is the matter with her. This woman has an extrauterine pregnancy. Blood has been effused into the abdominal cavity. It is walled in, and somehow or another septic infection has taken place, and she is suffering from that. I said we will open in the culdesac in this case to-morrow morning. We did so and evacuated a lot of blood and pus, and came upon a fetus about 1 1/2 inches long. What does this case teach? It teaches you that leaving a case of extrauterine pregnancy alone is a dangerous thing. I could report quite a few cases where the fetus was left and decomposition had taken place afterward. The point is that almost any practitioner can make a diagnosis now of extrauterine pregnancy, and we should preach the doctrine that when you have a case of extrauterine pregnancy you must operate, whether rupture has taken place or not; whether rupture took place an hour ago or yesterday. Do not defer operating on these cases, but operate as soon as you can; and secondly, if it has gone too long it is liable to become septic and you will have to operate on the case when a more serious condition of affairs confronts you.

Dr. William H. Humiston, Cleveland.—Our experience undoubtedly teaches the method that we should pursue in the handling of these cases. I have had an unusual record in ruptured tubal pregnancy; that is, I have as yet to have my first fatal case. I operate upon these cases as soon as I can prepare for operation. I do not care what the condition is, whether in shock or not. From my experience, if you are sure of your technic to avoid sepsis, and you are sufficiently dexterous to get into the abdomen, do the work, and complete the operation in a few minutes, your cases will recover. Also those patients who are in shock have improved in my experience the moment they have begun to inhale ether by the drop method. In addition to that, I introduce sterile saline solution under each breast, while they are being scrubbed up and the abdomen prepared. The salt solution is continued until operation is completed. I open the abdominal cavity quickly, find the fundus of the uterus, determine quickly the side that the rupture has occurred, clamp the broad ligament near the pelvic wall and again close to the uterus. This at once controls any further loss of blood and then you can be more deliberate in removing

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the ruptured tube and ovary. If we are aseptic in our technic, and dont lose time attempting to remove blood clots, but close the abdomen immediately, nature will take care of the case. We could spend twenty minutes in trying to remove all the blood clots from the pelvis if we wish to do so, but it is unnecessary.

I refer to one case in our city in which they waited twenty-four hours for shock to subside, after a diagnosis of ruptured ectopic gestation was made. Her physician made a diagnosis in this case, and a surgeon was called. She was in extreme collapse, and they decided to wait. They did so and after several hours the woman was finally operated on, and died in a few minutes.

As stated by Dr. Carstens, we should not wait, because where we have hemorrhage from any other cause we would act at once, and I believe it is a dangerous doctrine to go out generally to the practitioners of the country who see these cases, that they should be in no hurry to have an operation performed, but can wait. Under close observation in a hospital, where you can take the case and watch it with your assistant or trained nurse, there might be some excuse for delay in operating, but so far as I am concerned that would not have weight in my judgment. I should go into that abdomen and do my work and get out as quickly as possible.

DR. H. S. LOTT, Winston, N. C.—There is just one point in connection with this subject that I want to emphasize, and that is the *character* of the pain. Several times I have made a diagnosis of ectopic pregnancy in the early weeks, by sitting beside the bed of the patient, maybe in a negro cabin, and watching her for several hours; and the pain is always *recurrent, rythmic,* and *expulsive;* whereas, if the appendix is the seat of trouble, the pain is *continuous*, without intermission, and very often without remission.

DR. J. GARLAND SHERRILL, Louisville.—I wish to agree with what the preceding speakers have said, notably Dr. Carstens and Dr. Humiston. If we have a ruptured vessel internally, we would consider it one of the most dangerous forms of hemorrhage we have to deal with. If we have a gunshot wound of the abdomen, we would not wait to open the abdomen, and the same practice should be pursued in cases of ruptured ectopic pregnancy. If you have a ruptured tube with bleeding vessel, the hemorrhage should be controlled. If a patient has a hemorrhage slight enough that she can stand it and go ahead and get well, then there is no need of operating. You can wait in such a case two or three months to remove the remains of the pregnancy, but if a patient is dangerously sick with a sharp hemorrhage, in my experience the best method is to get at the vessel and clamp it. It can be done in two minutes or less, and the very minute the clamp is on the vessel the pulse comes up, and then saline solution can be used. Before that time, the saline solution washes out the clot and you increase the

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danger to the patient. Careful observation will enable one to make a diagnosis of the condition before rupture has occurred. In some instances, of course, we will make a mistake, but it is better to make a mistake on the safe side, rather than let the patient go on and die from inertia or temerity, or lack of nerve on our part to get into the abdomen.

DR. E. GUSTAV ZINKE, Cincinnati.—I have discussed this subject before this association and elsewhere, and while Dr. Carstens and others who side with him are right in the main, there are exceptions to their statements. The pathology of extrauterine pregnancy is not the same in every case. Some of these patients recover without our having known that they were pregnant. We find the ectopic ovum, occasionally, when we operate for supposedly other conditions. Tubal pregnancy—and nearly all of these cases are tubal in the beginning—terminates in three different ways. In tubal abortion, when the ovum becomes absorbed, an operation, as a rule, is not necessary. In rupture of the tube between the layers of the broad ligament, and in rupture of the tube into the peritoneal cavity operative interference is, usually, only a question of time. In case of rupture between the layers of the broad ligament (intraligamentous gestation) we have a well-defined tumor almost immediately and comparatively little or no shock from hemorrhage and pain. When rupture occurs into the peritoneal cavity, the pain is quite acute and shock very pronounced. The signs of internal hemorrhage are well defined. These are the cases in which prompt action is indicated. It is here the operator must decide whether an operation should be performed without delay, or whether it is better to wait until the patient has recovered from the shock and is in better condition for an operation. In cases of rupture of the tube into the free peritoneal cavity, with severe hemorrhage and all the symptoms of shock, except in hospital cases, an immediate operation is not the wisest procedure. Usually we see these patients at their homes and in places where the immediate opening of the abdomen would not be advisable. Experience has taught us that when these patients are placed in the recumbent position, with head lowered and an ice bag upon the abdomen that, within an hour or an hour and a half, an improvement in their condition takes place. The pulse returns and slowly becomes stronger, and a digital examination reveals the presence of a doughy mass to one side of the uterus. In cases where the formation of a swelling does not appear within a short time, the hemorrhage continues or, if arrested, soon recurs, the vaginal vault becomes more or less flattened and all the symptoms of ascites manifest themselves. These are the cases that must be operated upon without delay. But even here, as a rule, sufficient time may be spent, without increased risk, in preparation for an aseptic operation. When there is evidence of coagulation and encapsulation the operation may be postponed with absolute safety to a more favorable time

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and place. The dictum, operate as soon as the diagnosis of ectopic pregnancy has been made, has many exceptions.

DR. CARSTENS.—Does it hurt to operate on these exceptional cases?

DR. ZINKE (resuming).—Yes. It hurts when neither the patient nor the operator is properly prepared for the operation. Most cases, indeed the most alarming, improve very much within one or several hours after the first hemorrhage and shock, and then they bear the operation better. Patients operated upon during shock usually die upon the operating-table or soon after the operation.

DR. LEWIS S. MCMURTRY, Louisville.—Dr. Congdon and Dr. Waldo have presented very graphically a subject that it is well to keep before the surgical mind in order to maintain those established principles of practice that are so important, consequently these two papers subserve a very admirable purpose. The clinical experience given is confirmatory of the principles that are known and recognized as applicable to this subject. If you will take the transactions of the American Association of Obstetricians and Gynecologists and go back at least twelve years, I think I can say more than twelve years, you will find the discussion there practically the same as made on this occasion. We have under discussion one of the most brilliant chapters in gynecology, as it is the most perfect in its elucidation, magnificent in its surgical application, and brilliant in its achievement. It is almost wholly the work of one man, Mr. Lawson Tait. One of our confrères, and Dr. Webster, of Chicago, have perhaps established the fact that ovarian pregnancy does occur. With that possible exception, there is no important part of the subject but has been elucidated by Mr. Tait. The principles are plain. We have no other operative condition so grave and serious where the results are so uniform and brilliant. Of eighty-one cases operated upon there were only three deaths after operation, one from pulmonary embolism and the others from remote conditions. As Dr. Carstens has said, the diagnosis is plain and the indications for treatment unequivocal.

As to the subjective symptoms, I have known women who have had one attack of tubal pregnancy and were operated on to make the diagnosis themselves in the second instance, and call a doctor and tell him the condition that existed. When a woman is bleeding internally, there is only one indication, and that is to operate. It is true, in the majority of instances, if you leave these patients alone, many will not die from the primary hemorrhage. But a certain proportion of them will die from the initial rupture. The indications are clear for every case. Of course, surgical judgment comes in here as it does anywhere else. A surgeon of experience and capability may decide that this particular case can be left alone; that time can be taken to get everything ready, and have an elective

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operation, but as a rule, to immediately arrest the hemorrhage is the great cardinal indication for treatment.

DR. CHARLES L. BONIFIELD, Cincinnati.—I am very glad to have the privilege of supporting the view represented in the paper by Dr. Waldo. I never had the pleasure of meeting Mr. Lawson Tait. I have regretted it exceedingly because I have found that nearly every man who served a little while with him thought the progress of gynecology ceased when he died. But unfortunately or fortunately with the death of Lawson Tait did not occur the death of all women in the world, and there has been time for observation of cases since the death of this great and good man. The last speaker said that we should arrest hemorrhage here the same as we should arrest hemorrhage from the femoral artery. Gentlemen, the conditions are not even the same. Who ever heard of a femoral artery stop bleeding by itself; it makes no difference how long you wait? On the other hand, clinical evidence is accumulating each year showing that the question of waiting in these cases is increasing in popularity, and furthermore, clinical evidence is being furnished right along that in a large majority of cases if we wait and leave these patients alone, the hemorrhage will stop; but the femoral artery never stops bleeding when once it is cut unless it is ligated.

Another point I want to emphasize as strongly as I can is that ninety-nine cases out of every hundred I have operated on—and many of them I have operated on just as soon as I could get there—were not bleeding when the abdomen was opened. The man who practises sponging out fresh blood is disturbing the clot in his manipulation; but the vessel is not really spurting. Because the belly is full of blood away up above the umbilicus, does that prove the patient is bleeding? Not at all. Very few cases I have seen really had an active hemorrhage going on.

The next point I want to emphasize is that by the time the operator gets there usually this hemorrhage has taken place. You do not operate to stop the bleeding, but you operate to relieve shock, because in the majority of cases the hemorrhage has already stopped. Those patients who bleed profusely do it quickly until the blood pressure is relieved, and then bleeding is slow until it stops entirely. Now, if this were not the case, we would be justified in treating them as we would an external vessel, but unfortunately, in spite of our boasted asepsis, in spite of our improvement in technic, it is not quite as safe to-day to open the abdomen as it is to cut off a finger. There is a little more danger of accident; there is a little more danger of serious sepsis, and we all know when a woman has a blood clot she is a more ready prey to sepsis.

Another point I wish to emphasize is that if you do wait, do not stimulate the patient. That, of course, is bad practice. Do not give hot water. Do not give strychnine, but give morphine

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to keep her quiet. Those are the conditions under which in the majority of cases one can wait. It is so easy to lay down a hard and fast rule. I believe in the majority of cases in operating, but Dr. Humiston has said it is dangerous for us to preach waiting in presence of shock. Is it half as dangerous to preach that they must not be operated on, or that many of them can wait, as it is to preach they must be operated upon every time by every Tom, Dick and Harry, who does not know how, and under the most unfavorable circumstances?

DR. WALTER B. CHASE, Brooklyn.—I have been thinking of what happened two years ago in Baltimore when this matter was under discussion there, and recall the sentiment as being different from what it is to-day. Now, gentlemen, this is a very uncertain discussion for the younger practitioners and students who are here to-day, and equally perplexing to the medical profession as a whole whether to operate or not; whether to submit to the evils you have or fly to others you know not of. What shall be done in a given case? You are all grounded in the principles of surgery, or every man believes he is, but we have different methods of reaching the same end. But we must stop and consider this question of whether to operate or not very carefully. You cannot make a universal rule which will apply to every case of ruptured tubal pregnancy. The man who attempts in advance to formulate a system of action will go wrong more than half of the time. You must treat every case according to the findings and according as to your preparedness. Many years ago a man would be hooted who got up and said it was safe to wait one, two, or three days in a case of ruptured tubal pregnancy before operating. What is the consensus of opinion now? Dr. Carstens believes that the consensus of opinion is that immediate operation should be done. The consensus of opinion is, I believe, exactly the contrary. It is a conservative thing to wait in some cases. It requires more courage to put off operation, when you suspect that hemorrhage has occurred, than to operate. Now, gentlemen, every case must be a law unto itself. You cannot make a rule that will apply to every case, and the sound judgment of every practitioner who is competent to deal with such cases will decide in that individual case whether an operation should be done or not, and if any one attempts to formulate a statement of what shall be done in every individual case, he will go astray.

DR. JOSEPH PRICE, Philadelphia.—I am glad the war horses are through, and I am glad of the pleasure of discussing this subject again in this association. I feel in regard to ectopic pregnancy and all perforative forms of disease that belong to the calamities, that we should be prepared to do an operation and do it promptly. The surgeon should be the cleanest and most prepared man living. We ought to go to bed with surgical hands. Surgery is costly; you cannot do it in an economical way with good results. While operating on cases of appendicitis for a Sister of Mercy, with

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400 children under her charge, I have been in the habit of closing my thumb in the palm of the hand and giving her the four symptoms of appendicitis she should be familiar with—namely, a bad pain, tenderness, vomiting and a temperature of 101°, not higher. In ectopic pregnancy, with delayed menstrual period, with an acute agonizing pain, a pain so severe that the woman has never had anything like it before, notwithstanding she has had dysmenorrhea and abortions, if she is blanched and restless, you can depend that she has symptoms of concealed hemorrhage.

Now, surgery is good treatment for the loss of blood. Dr. Agnew used to say in stab wounds and gunshot wounds of the abdomen, enlarge the opening and seek the offending vessel. If you have a hemorrhage, it is your duty to seek the offending vessel.

Surgery for ectopic pregnancy, like all surgery, had its origin in Philadelphia. (Laughter.) John Parry wrote the first book on the subject, and Mr. Tait in his allusion to this classical book laments the loss of one so brilliant. While sitting at Mr. Tait's table I thanked him for the beautiful allusion he made to John Parry. He was one of my old teachers at Blockley Hospital. Mr. Tait left the table and came back with John Parry's photograph, and a beautiful letter from his wife. Mr. Tait said Parry's wife kindly sent him his photograph and this note which he read at the table. All things considered, Mr. Tait was one of the most wonderful men I ever knew. He was so wonderful that the great Nicholas Senn, who in one decade contributed more to surgery than the rest of the world, while visiting Mr. Tait and seeing him operate, said he was a juggler; that he did an operation before he recognized what he was doing or how he was doing it. I would like to be that kind of a juggler. I would like to do surgery without the crowd recognizing how I was doing it. It would not make any difference whether I had a stubby hand or not. Senn, you will remember, referred to Tait's stubby hand, and said he introduced his stubby hand and did the operation before he knew what he was doing. But I insist that at home we did these operations as quickly as possible, and we looked upon good surgery as being the treatment for these cases. If you are going to wait for and treat so-called shock or collapse and increase the heart pressure, you are going to displace the clot, and you will have recurrent hemorrhages, and the lesions from the delay are often as bad as they are from so-called shock. I am satisfied that the presence of a clot is a foreign body, and that shock is due to the presence of a clot or foreign body because the quantity is not sufficient to explain the symptoms. If you will reduce an umbilical hernia or remove a tumor as large as an infant's head, while the patient is in shock or collapse, the chances are she will die but if you put that patient to bed and purge her for a day or so and make gentle efforts at the reduction of the hernia, the patient does not die. Sudden reduction of this large tumor, which is a sort of foreign body, gives rise to the shock. It often is a solar

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plexus blow, and the patient will die. It is my impression that the presence of a clot gives the patient shock. Surgery is the treatment for ectopic pregnancy, and after operation the pulse falls at once. The pulse falls after careful anesthesia from 160 to 140 or to 130, just as the pulse falls in typhoid fever perforations in the walking cases after operation. Surgery is the treatment for shock in perforating typhoid. You can use hypodermoclysis or you can use salt by the bowel, and use salt in the peritoneal cavity if you wish, but your surgery should be very simple, and I have said repeatedly that when a patient is getting a bucket of coal or hanging out clothing, and is suddenly seized with an agonizing pain, it is better to put a ligature or a clamp on the uterine end of the tube before the patient is shipped.

As to the diagnosis of ectopic pregnancy, it is simple, and intelligent women who have made themselves familiar with the history of the subject commonly make the diagnosis themselves, particularly the wives of physicians. There is a peculiar mental disturbance associated with ectopic pregnancy that the intelligent observer ought to notice. I am satisfied that women with ectopic pregnancy are not themselves. We have the ordinary disorders of pregnancy, but in ectopic pregnancy we have extraordinary disorders of pregnancy. Their mental condition is not right. This mental condition we observe also in the natural history of fibroid tumors of the uterus. It is seldom that women who are carrying fibroid tumors of the uterus are right mentally. The Germans attribute this to fatty degeneration about the heart. However, we have irregular and profuse or copious hemorrhages with a fibroid. Whether it is fatty degeneration, or whether it is the loss of blood, I am not prepared to say because I am not doing laboratory work. That belongs to the scientific chap, and not to the practical surgeon. But the mortality from ectopic pregnancy ought to be *nil*, and if operations are done promptly and rapidly there is little or no shock. The incision is made through nonvital parts or structures. It is not in the deep fascia of the neck, nor in the region of the pneumogastric or phrenic nerve, and there is little or no shock associated with a small incision through nonvital structures; there is no hemorrhage. If men are going to cut open the vaginal vault to clear up the diagnosis and then open the abdomen, they are doing two operations which will result in additional shock. To open the vaginal vault to make a diagnosis when a patient is blanched, when there is an absence of one or two menstrual periods, is a piece of diagnostic stupidity, and it is making another incision in the lymph spaces to add to the infection or sepsis. We have threshed out this subject repeatedly in this association, and, like appendicitis, the only thing to do is to keep on reading papers on this and other subjects in order to reduce the mortality which is constantly going on. But very few of you have fought for the small hospital. The general surgeon has condemned the small hospital. We have now established all over this great land in every village and every cross

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road a small hospital. Why? Because people are suffering from calamities and from infections, and they want surgical work done promptly. They have been tortured in the past by delay in operating and by being transported long distances to dirty establishments, receiving treatment that was brutal and not characteristic of a humane people. What has been the result? Our young doctor, who has served an apprenticeship at the opposite side of the operating-table for six months, and has become so thoroughly familiar with Dr. Jones' or Dr. Smith's ability and judgment and technic, that he goes to a small town or small city, and saves lives in large numbers. His mortality is as low as that of his master. These boys are not liars, they cannot lie. They have too many intelligent observers who know what they are doing. So I find these young practitioners scattered all over the country. A number of them are scattered over Texas and Kansas. These practitioners have paid me the compliment of coming to Philadelphia and remaining there a few weeks to see my surgical work. They have told me that they had had some difficult cases to contend with, but they have gone home, after I have shown them how to deal with certain cases, and have done the work safely and well.

I have never trusted myself to use so uncertain a material as catgut, nor would I recommend it to the young surgeon. I have a horror of catgut. Kelly at New Orleans said it was an abomination upon the face of the earth, and he ought to have stuck to that statement. I did. I stuck to it long before he made that observation. What happened? Practitioners in Chicago, Philadelphia and elsewhere buy No. 2 commercial catgut and lose patients from infection and hemorrhage. When you recommend the use of catgut you are putting into the hands of young men an uncertain material. They have neither experience nor judgment, and it is a sad mistake. It is better to recommend the use of pure, strong silk.

DR. CONGDON (closing the discussion on his part).—I am very sorry I was unable to finish reading my paper, although it has been amply discussed. It is not my policy to cross swords with my friends, but when they make the assertion that the diagnosis of ectopic pregnancy is always easy, and anyone can make it, without any preparation, I certainly have to take exception to that statement. I do not believe they really meant that. They meant they could make it, but not the general practitioner. The vast majority of cases that come to me and come to my surgical friends are undiagnosed, and I do not believe the diagnosis is so simple.

However, the point that I would like particularly to emphasize is that cases of apparently ordinary uterine abortion should be closely watched, bearing in mind that, among them, will be found many of our cases of tubal rupture or abortion.

DR. WALDO (closing the discussion).—I would like to say a word or two regarding the diagnosis of this disease, as my paper

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did not cover that phase of the subject. Our experience has been that the majority of cases come into the hospital with an incorrect diagnosis. A mistake that is made much more frequently than any other is that the patient is suffering from incomplete abortion. With an ordinary tubal pregnancy, there is a succession of slight hemorrhages, so to a certain extent it is a pardonable error. The patient has an attack of pain; the temperature goes up to about 100–1° F., not above that, and she improves. She has another one, and I have lots of these cases where the patients have been cureted. There is one cardinal symptom of extrauterine pregnancy, and it is this: if you curet the uterus of a patient who has extrauterine pregnancy you do not cure the hemorrhage. If you curet a uterus in incomplete abortion, you cure the hemorrhage. The pain is of a different character. With abortion, the patient's face flushes, and pulse is usually full except in very rare cases where there is severe hemorrhage, but usually with extrauterine pregnancy, the face of the patient is branched; the pulse is weak and rapid and scarcely perceptible at the *wrist*. These patients have the same symptoms that the small boy has when he has a colic from eating a green apple. His face is blanched, his pulse is weak, he is to a greater or less extent shocked, and you do not perform a laparotomy for that shock.

Coming to my own paper, I knew there was going to be a lot of discussion. I have brought this subject up repeatedly. I read the first article and published it in 1905, and advocated what I have done to-day, and I want to say that a gunshot wound is not a parallel case. You have the intestinal contents escaping into the peritoneal cavity. You have cut off a large bloodvessel and the hemorrhage is free. The hemorrhage you have in extrauterine pregnancy is not so free, nor is there the escape of material into the peritoneal cavity. There is sudden shock and sometimes very profuse bleeding, but, as a rule, the hemorrhage has ceased when you operate.

We should get out the superfluous blood and close up the abdomen as quickly as possible. I operate as soon as possible in every instance if the patient is not in profound shock, and by so doing, I think we will get the best results. I have been a little misunderstood in what I stated in my paper. I do not believe that many of these patients have a bleeding vessel when we are called to see them; they are suffering from shock, and not from actual hemorrhage.

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TUMORS OF THE BLADDER.

BY

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AND

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As a preliminary procedure in determining the nature of the surgical intervention to be followed in the above condition one should, by means of cystoscopic examination, ascertain the exact location, whether the cause for removal be single or mnltiple, pedunculated or sessile, villous or cauliflower, in appearance. The occasion for such examination in the vast majority of cases will prove to be an intermittent spontaneous hematuria; rarely, when the growth is located in the region of the vesical neck, the blood will be more marked at the end of urination. This hematuria is capricious, entirely independent of external causes, such as obtains in the case of vesical calculus; in fact, it frequently is more marked when the patient is resting in bed, disappearing and reappearing without discernible cause. There may be intermittent obstruction to the outflow by either the mass or fragments plugging the internal orifice, as observed in one case of papilloma. Occasionally, however, there may be a rebellious cystitis requiring cystoscopic examination which first reveals the presence of a vesical growth. Thompson has called attention to dysuria as an indication of malignancy; it would appear, however, to be more of a determining factor in cystitis than in the former.

For the cystoscopic examination it is best to employ an instrument carrying a direct and an indirect telescopic tube, thus giving a vertical as well as a horizontal picture. In this way one obtains a better idea as to the extent of the pedicle, a most important item in determining the mode of ap-

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proach. Careful but thorough irrigation is a very important requisite in the conduct of this procedure, as, while it is proper when possible to undertake the examination in the interval of bleeding, nevertheless cases present themselves for diagnosis in which the hematuria is either so abundant as to require immediate intervention, or, as in a recent case under the observation of the junior contributor to this paper, of a gland-cell carcinoma with pedunculated outgrowths situated about the left ureteral orifice, and in which the hematuria was constant for forty days; while during nine months prior to this there had been complete absence of blood. This period followed three months of constant hemorrhage.

The irrigation is best conducted from a reservoir through a double-current tube, having a small inflow and a large outflow. By means of this appliance too sudden distention of the bladder is avoided, while the large outflow affords ready evacuation of the clot; and the addition of an adjustable diaphragm attachment permits of the leisurely interchange of the various telescopic tubes without the customary jarring, with its attendant traumatism.

Beyond ascertaining the exact situation, the extent of pedicle, and the size and general physical characteristics of the growth one should not go. Least of all should one attempt anything more than a tentative diagnosis, inasmuch as pedunculation is by no means a definite indication of benignancy (Albarran reports twenty-eight pedunculated growths, thirteen being benign and fifteen malignant); and not infrequently do pedunculated growths present themselves as outriders from a malignant base. Nor should much dependence be placed on the microscopic examination of particles spontaneously expelled, while frozen sections at the time of operation may be misleading; and the fact that an induration of the pedicle at its site of implantation may be the result of a hypertrophy of the connective-tissue element of a benign growth, rather than an indication of malignancy, serves to accentuate an already complex situation.

It is well to reinforce our cystoscopic examination with a stone-searcher exploration, as by means of this examination one may determine fairly accurately the degree of infiltration presenting in the growth. In three cases of vesical carcinoma coming under the observation of Dr. McCarthy a correct diagnosis was arrived at in this manner. Rectal palpation should always

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constitute a step in the examination. It may be advisable to catheterize the ureters before operation. Inasmuch, however, as the growth in the majority of cases is situated near one or the other orifice this procedure is not infrequently found impossible, as there may be complete obstruction of the orifice by the neoplasm. In such event one should catheterize the ureter on the healthy side, to serve as a guide in locating the other. This should be attempted first with the indirect prismatic cystoscope. Failing in this the Buerger cystourethroscope, or the aspirating cystoscope of Luys may be employed. Should this prove unsuccessful the catherization may be conducted through the open bladder by means of the last-mentioned instrument. This operation should, however, be necessary only in the event of obstruction of the ureteral mouth by the growth, as with the present armamentarium one should hardly fail otherwise.

The operative procedure will depend upon the pathologic appearance, the location of the tumor, the type of attachment; and finally as to the number—whether one has a single growth or multiple ones to contend with. Those tumors or growths which to the examining eye present an appearance of infiltration about the pedicle, or about the margins in a sessile growth, should be as fully removed as those pronounced malignant; while in the soft pedunculated and sessile type excision through the mucosa is all that is necessary.

In regard to position, one cannot attack a growth in the immediate vicinity of the ureteral orifices without being prepared to do a new implantation. When multiple growths are present either a wide removal of the surrounding mucosa or a partial resection of the bladder may be found necessary. Pedunculated growths of an apparently benign character situated in the immediate vicinity of the ureteral orifice, however, may be removed as in another situation without much fear of injury to the ureter, care being taken to leave room enough when suturing the mucosa for the escape of urine from the ureter, as subsequently the latter reassumes its original appearance. Infiltrating growths situated about the ureteral orifice or on the anterolateral wall near the internal vesical opening require fairly extensive resection through the entire bladder wall, at least two centimeters beyond the affected area.

Infiltrating growths of questionable malignancy from a clinical

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standpoint, and necessitating the removal of considerable bladder area, may be removed after the method of Charles Mayo (*Annals of Surgery*, Vol. XLVIII, p. 107): "The patient is placed in a high Trendelenberg position, and a median incision made from the pubes upward for 6 inches or more; the pelvis is well packed with gauze pads which hold the intestines in the upper abdomen. The abdominal incision is also protected by gauze pads. The bladder is caught up by two tenaculum forceps, lifted into the wound and opened by a 2-inch median incision. The small amount of fluid in the bladder is absorbed with gauze and the incision is enlarged upward and downward until it is ample for the purpose. The tumors may be cut from the bladder with scissors and the denuded area burned with cautery.

"The bladder wound, regardless of its size, is closed by a through and through continuous suture of catgut introduced in the original Connell method. This stitch is a running mattress suture and is passed through the entire thickness of the bladder wall, all loops passing from the mucous side, and when drawn close making a complete air-tight and water-tight continuous mattress stitch. The line of suture is now protected by a suture of silk, or preferably linen, applied as a Cushing parallel peritoneal suture, taking a square bite of the perineum first on one side then on the other of the line of closure, the needle being inserted parallel with the incision. This suture approximates the peritoneum and protects the primary suture just as when it is employed in gastro-jejunostomy, and is used for the closure of all the bladder incisions and resections, regardless of the amount removed."

Mayo further states in this same paper "That there are few lymphatics in the bladder, and these are exceedingly inactive, which fact delays metastases of malignancies, rendering them for a considerable period inactive, and that carcinoma of the bladder may, when taken early, be considered curable by operation.

Berg (see *American Medicine*, June, 1910) is rather pessimistic on the question of long postoperative duration without recurrence. Harris, in the *Annals of Surgery* for October, 1902, claims that two-thirds or more of the bladder may be removed, and that the remainder will regenerate (?) (interrogation J. F. Erdmann's) and dilate to such a degree as to become a serviceable organ in many instances.

In view of the great number of intraperitoneal ruptures of the

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bladder operated upon, both by the general and the special surgeon, during the past twenty-five years, it appeared to the authors rather strange that the transperitoneal operation for the removal of bladder tumors had not been advocated years ago. Careful investigation of the literature, however, shows that Albarran in his "*Tumeurs de la vessie*," 1891, quotes Rydigier (*Weiner Medicinische Wochenscrift*, 1885) as advocating the deliberate transperitoneal resection of the organ, calling it laparocystectomy. (The authors have been unable to verify this reference.)

A great portion—one might say the majority—in single tumors of pedunculated papillomata surmount one or the other orifice. In seven cases of vesical neoplasms examined by us four were located about the left ureteral orifice, two about the right, and the most recent case involved the anterolateral wall just posterior to the ureteral orifice.

In such cases the possibility of injury to the ureter is always to be considered, and should the pedicle be infiltrated so that the growth is within a quarter of an inch of the ureter, the ureter should be excised at this point and a new implantation done. Where, however, the necessity of resecting a small bladder area with implantation of the ureteral orifice presents itself, this may be conducted extraperitoneally. It is desirable when possible to introduce a ureteral catheter to serve as a guide in locating the ureter as well as in its subsequent implantation.

In the extraperitoneal operation, having stripped the peritoneum laterally down to and beyond the ureter, one resects through the entire bladder wall, either from without inward or from within outward, as the case may be, employing the tumor mass and the ureter with its catheter as a pedicle. The bladder wall should be cut in such manner as to permit of proper closure of the wound. The ureter may then be implanted in that angle of the wound closely approximating its original situation, or it may be relocated by buttonholing the bladder wall, having in mind at all times the desirability of placing it as near its original position as possible, as well as the avoidance of kinking.

Immediately upon opening the bladder the entire vesical mucosa should be carefully searched for small outgrowths, which when found should be snipped with scissors and the stump cauterized before devoting our attention to the main growth. The necessity for such action arises from the fact that after exposure the mucosa becomes thrown into the folds which readily

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obscure small outgrowths, and which without removal would constitute a potential source of recurrence of the original condition.

Cystoscopic cauterization has been strongly advocated by Nitze, and the report of a few successful cases by Luys has been noted; while quite recently, intravesical treatment has been supplemented by Beers and Keyes of New York and others, who have practised fulguration or high-frequency currents in a few cases. This method, while showing considerable destructive action to the growths, is still in the experimental stage. It has, however, demonstrated in these cases its ability to bring about a cessation of hemorrhage in papillomata, something we have heretofore been unable to control. Of this method we will speak later.

In one case of carcinoma of the bladder coming under the observation of the junior contributor, Hodenpyle's serum was employed, but the patient reacted so unfavorably that its use was discontinued. Sarcomata or other neoplasms invading the bladder by extension from the prostate may be treated by lumbar nephrostomy. In view, however, of the exceedingly great number of recurrences, and the almost invariably fatal nature of the condition, it would appear advisable to regard it as an inoperable one, and limit our interference to the employment of palliative measures.

It would appear, too, that cystoscopic operative procedure should be limited to small, well pedunculated growths and the alleviation of hemorrhage in extensive recurrences; and that the best results are to be had from early diagnosis and wide removal either of the mucous membrane in the apparently benign type, or extensive resection of the entire bladder wall, either extra- or transperitoneally, with or without ureteral implantation, in the cases presenting indications of malignancy.

In three cases of well pedunculated growths seen and operated upon by J. F. Erdmann, one fairly small, one almost filling the bladder, and the third as large as an English walnut, the usual suprapubic operation was performed, and it was found in the progress of the cases that a small portable electric light and a Kelly proctoscope or Ferguson speculum were of decided benefit. The former allowed of free inspection of the bladder, while the latter was a useful contrivance during cauterization of the denuded area, preventing burning of the healthy bladder beyond the seat of involvement.

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The bladder being opened and the growth outlined, a pair of Hunter or allied forceps were used to seize the pedicle, gentle traction was made so as to "cone" the mucous membrane and deeper walls of the bladder, then a curved forceps was used to seize the raised cone below its base. The growth was then excised and sutures of catgut placed below the clamp similar to the procedure in operating for hemorrhoids. The cautery was used within a Kelly proctoscope in one case for rather free bleeding from the upper angle of the wound. Guyon has devised a forceps for seizing the pedicle (see *Albarran*, 1909, p. 620), shaped somewhat like a sickle, that should work most satisfactorily in this type of removal.

Although I (J. F. E.) did not close the bladder in any of the three cases of pedunculated papilloma operated upon by me, I feel that I shall certainly do so in any subsequent noninfected cases. If we control hemorrhage at the time of removal of the growth, the use of a retention catheter for a couple of days, or an every three- to five-hour catheterization should be ample protection against leakage or rupture and infection, and would thereby diminish our patients' convalescence by weeks. A double-current catheter constant irrigation might also be an agent to promote prompt repair.

In my second case, a papilloma the size of an English walnut, a very disagreeable pelvic and saphenous phlebitis complicated an otherwise slow convalescence.

CASE I.—Service of J. F. Erdmann. E. F., forty-two years of age, was operated upon on October 30, 1905, previous to which time he gave a history of repeated vesical obstruction, with voiding of blood and bloody urine. The obstruction, which was of a temporary nature, was usually relieved by the passing of a sound. When seen by me he had just experienced an attack of this sort in the South. The character of the obstruction was somewhat similar to that of stone. The stream would shut off suddenly, but without pain, and all the straining possible would fail to release the obstruction. At the time of the attack in the South a small white fragment was passed, which he preserved and brought with him. On gross appearance it resembled a fragment of papilloma. Microscopic examination demonstrated it to be of papillomatous material. Cystoscopy a couple of days later showed a papillomatous growth on the outer side of the orifice of the left ureter.

The operation was done suprapubically. The growth was

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about as large as a chestnut, and the small pedicle was clamped off and treated as described above. Upon releasing the clamp after tying the suture I found rather free spurting of blood from the upper angle of the wound. A Kelly proctoscope was introduced, so as to enclose the area operated upon, and with the aid of a small electric light the bleeding point was rapidly sponged and effectively touched with the actual cautery. The patient was discharged in sixteen days.

CASE II.—Service of J. F. Erdmann. H. F., aged forty, visited me in September, 1907, and gave a history of occasional bleeding in a very short period of time. The urine varied from a slight evidence by microscope to very profound evidence of fresh and disintegrated blood. On his second visit to me in the office he passed urine the color of coffee, filled with sediment. There were no evidences of pain whatever at any time in his history, his attention being called to the trouble by seeing the discoloration of the urine. Cystoscopy showed a papilloma about the size of a filbert, near the right ureteral orifice, and pedunculated. This was removed September 23, 1907, and, barring a phlebitis, both pelvic and saphenous; his convalescence was without further note, the wound in the bladder having healed in fourteen to sixteen days. The method of removal was suprapubic. The pedicle was grasped in the forceps and excised through the mucosa and submucosa, with final suture.

CASE III.—Service of J. F. Erdmann. A. C. M., about thirty years of age, came to me November 27, 1906. Eighteen months before, while urinating, he noticed that he was passing blood, and that at certain times it would be almost pure blood. Then there were evidences of intermittent bleeding, sometimes just enough to stain the urine, sometimes profound discoloration with clots. There would occasionally be a spasm upon urinating, before the bladder was empty. In the past two months there had been no visible evidences of blood until one week before his visit, when he observed fairly profound evidences again. Bloody urine would be induced by jumping on and off cars. He had never had any pain referable to kidneys, perineum, bladder, or urethra, and no thigh or leg pains. Health otherwise was absolutely perfect. Once he had slight pain in his groin; occasionally has had pain in the lower right side. Has never had any specific disease. He said that the first voiding of blood occurred subsequent to taking a bottle of citrate of magnesia, which was followed by violent catharsis. Urine

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analysis was negative as to kidney cells, casts, and the like. He had never had any putrid urine, nor been examined by cystoscope or searchers. There had been no loss of flesh. He voided an ample quantity of urine. Cystoscopy showed papilloma of very large size, which apparently arose from the left side.

Suprapubic operation was done on Thanksgiving Day, 1906. Upon exposing the interior of the bladder it was found that the papilloma arose from a base of 1 1/2 inches in length and 1/4 inch in width, just above and to the left of the left ureteral orifice. The papilloma itself was one that practically filled the hand. Removal was made by means of excision and suture of the gap in the mucosa and submucosa. The patient made a recovery in a period of three to four weeks.

CASE IV.—Service of J. F. Erdmann. This was a case sent me for diagnosis through the courtesy of Dr. Pomeroy, of Waterbury, Conn., and gave the following history: P. L., age thirty-six. Gonorrhea three years ago, and bloody urine off and on for ten years. Has had no pain, no lump, and no weakness except from bleeding. Goes for a period of time with no bleeding, then will have bloody urine for three or four weeks. Has passed clots. Examination by cystoscope showed a beautiful large papilloma to the left. I herewith append a letter from Dr. Pomeroy, following the operation:

"I have been waiting for the pathologist's report before answering your letter regarding the case of P. L. I took him into my service at the Hospital and we operated on him February 14. I found a single papilloma near the left ureteral opening, pedunculated, and about the size of a mandarin orange. The pathological examination did not show any evidence of malignancy. The pedicle showed no cell infiltration of either epithelial or connective-tissue types. The patient made an uneventful recovery, and was discharged cured March 5."

CASE V.—Service of J. F. Erdmann. J. K., age fifty-five, has had bladder difficulties for a number of years, voiding three to five times at night and every half-hour or oftener during the day. Pain on riding, similar to that manifested by stone in the bladder; stream has been known to shut off; passes blood occasionally; is not certain, but thinks he has lost flesh. Examination by cystoscope showed no evidences of stone, but a large tumor, pedunculated, and about 2 inches long, 1 1/2 inches wide, and 1 inch deep, was found situated on the fundus,

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slightly to the left of the median line, covered over its greater area with a calcareous deposit. This deposit was felt by his family physician, who sent him to me for a stone in the bladder. Operation, suprapubic transvesical. Analysis proved the growth to be epithelioma.

This operation was done on July 22, 1910, and, although rather early to include in a paper, he presented such a marked improvement in symptomatology that I feel the case is worthy to be reported.

In addition to these cases two malignancies of the bladder in females have occurred in my service; one in a woman of forty-seven, in whom the tumor was a typical carcinoma and situated in the left ureteral zone. Her history is as follows:

CASE VI.—Service of J. F. Erdmann. I saw this patient ten years ago, with a large tumor involving the left area of the badder wall, in the vicinity of the ureteral orifice. The growth was so advanced that it was impossible to state whether or not this tumor had been a papilloma with malignant degeneration. No operation.

CASE VII.—Service of J. F. Erdmann. Miss H., forty-four, the second of the female patients mentioned above, came to me in September, 1908. She had been perfectly well up to two years before this time. She first noticed bloody urine at the urethra, and was operated upon for urethral caruncle. She had a cessation of menses for one year, then a recurrence. From June to September she had passed blood daily. The voiding of urine with blood has always been painful. Some loss of flesh. The external meatus was negative, but the floor of the urethra near the internal meatus was enlarged to about the size of the thumb, and continuous with a large mass in the left portion of the bladder. No uterine invasion. She returned in December, having refused operation at the previous visit. At this time I did a suprapubic section, and found that the growth involved over 50 per cent. of the bladder capacity. Dr. Brooks of Carnegie Laboratory reported the analysis as follows:

"The growth is a carcinoma of the encephaloid variety. In so far as one is permitted to judge from the histological structure and especially from the type of the cells and their arrangement, one would think that the growth was most likely to have originated from the mucous membrane of the bladder. This is the youngest case of primary cancer of the bladder that I have ever seen in a woman."

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Dr. Brooks further remarks that in his experience primary malignant tumors of the female bladder are quite rare, and in this I agree with him, having seen but the two cases here recorded. I concluded this operation by simply removing the section, and establishing for the patient's comfort a suprapubic drainage. She died in February, 1909.

Since writing the above portion of this paper, which was to have been presented before the Genitourinary Section of the New York Academy of Medicine last spring, cases numbers one and two have returned with histories of blood showing in the urine.

Case I, upon cystoscopy showed a large mass, suspicious of malignancy, to the left of his bladder near the ureteral orifice; while Case II shows upon cystoscopy four papillomata that to all visual signs are benign.

These two cases I have turned over to Dr McCarthy for experimental fulguration. His citation is appended below, with reports of three other cases.

CASE VIII.—Service of J. F. McCarthy. Male, age sixty-five, admitted to Bellevue Hospital two and a half years ago. Hematuria for six months, spontaneous. At the time of admission he was in a state of uræmic coma which lasted about three days, after which time his condition improved. At this time his bladder capacity was 3 drams. Following three months' observation and treatment his capacity was brought up to 16 ounces, and cystoscopic examination showed cauliflower growth over the right ureteral orifice, probably malignant. Operation refused, and observation continued to date.

Observations.—Bladder lavage in this case, contrary to the general belief, brought about marked improvement, and while its effect on the hematuria was little if any, it none the less greatly increased the bladder capacity, and the patient has gained 20 pounds during this time. Creolin was found to be the best in lavage.

CASE IX.—Service of J. F. McCarthy. Italian, age forty, hematuria intermittent in type lasting one year. One interval of six months with absence of macroscopic blood. Cystoscopic examination revealed cauliflower growth totally obscuring the left ureteral orifice.

Operation.—The bladder was opened, and a large infiltrating growth involving the base and lateral walls, and including the ureter on that side, was found. It was deemed advisable

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simply to remove a section for microscopic examination. The report was a gland-cell carcinoma. The wound apparently healed, but within three months, during which time the growth increased to immense proportions, the patient died. Before leaving the hospital, however, he was subjected to several injections of Hodenpyle serum, but he reacted violently after each injection, and with no apparent beneficial result.

Observations.—Contrary to the usual custom this neoplasm in a short time underwent a very marked increase in size.

CASE X.—Service of J. F. McCarthy. Coachman, age fifty-six, well preserved. Hematuria for six months. Cystoscopy showed a well marked cauliflower growth obstructing the left ureteral orifice, and a widespread condition greatly resembling a bullous edema.

Operation.—The bladder was opened, the growth grasped with a Guyon tumor clamp and cauterized with actual cautery to its base. Upon release of the clamp a well defined gush of urine escaped from the middle of the mass. Following the operation the hematuria disappeared, and since that time, a period of four months intervening, the patient has enjoyed apparent good health. Subsequent cystoscopy shows the above-mentioned edema as persisting, and a well marked cicatrix at the site of the tumor.

Observations.—Unusual feature of well defined bullous edema; also the fact that active cauterization which must have involved the ureteral mouth has had no subsequent ill effect on the latter. (See Albarran.)

Dr. McCarthy's report on CASE I: recurrent after nearly five years. One large villous growth situated just behind the left ureteral orifice. Three fulguration treatments with marked diminution in size.

Remarks: fact of recurrence at a site remote from the position of the original growth.

Dr. McCarthy's report on Case II: recurrent papilloma after nearly three years. Four small papillomatous outgrowths at the site of probable incision in the roof of the bladder, and one larger similar mass on the left lateral wall. Three fulgurations with the Oudin current, with hematuria absolutely stopped, and considerable diminution in the size of the growths.

Remarks: marked effect on the hematuria, which may be brought about by no other known agent.

As to Fulguration.—I find the technic incomparably more

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difficult than ureteral catheterization, and consider that the procedure should be confined to those expert in cystoscopic operation. Of course the work done along this line is at present in so immature and incomplete a state that one should be exceedingly conservative in anticipating results. That it does, however, bring about a cessation of the hematuria in the vast majority of cases there can be little doubt, and this in itself is a distinct gain. It is also a well-known fact that this agent will destroy similar growths on the skin surface of the body, and it would seem that the water medium customarily employed may ultimately be dispensed with in favor of air dilatation, and in this way it is my opinion that a much more rapid and profound action may be anticipated. In my work in intravesical fulguration I have found it essential to have absolute control of the make and break of the current, and to this end I have had constructed for me by Mr. R. Wappler a foot switch that operates most successfully.

Certain situations of these neoplasms, such as in the case mentioned above where four papillomata are located in a straight line on the median aspect of the vault of the bladder, may be found difficult of approach. The difficulty in this case has been readily overcome by pressure of the hand on the hypogastric region above. No prostatic malignancies, nor those in which the question of secondary invasions of the bladder arose are considered in this paper.

Physical Examination.—The rectal or vaginal examination should never be omitted in these cases. Catheterism is not of much value and is dangerous on account of hemorrhage and cystitis. The course of the condition is generally long, twelve to fifteen years. The frequency and abundance of hematuria, of course, plays the great rôle in duration. Death may at times take place from obstruction of the mouth of the ureter, provoking hydronephrosis or anuria, or a reflex anuria may supervene. Finally, the tumor may recur as a malignant one.

Recurrences as Malignancies.—Certain authors base their claims that the malignant tumors undergo their evolution on the spot, as they cannot be spread by means of lymphatics, there being none (?) in the bladder. This theory is based on the researches of Professor Sappey, who denies the existence of lymphatic vessels in the bladder coats. This idea has, however, been controverted by the work of M. and Mme. Hoggan, who have proved the existence of these vessels in the bladder.

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Other authors have claimed that these growths are in reality in their incipiency benign tumors, and at a given moment become transformed into malignant ones.

Mortality.—Francis S. Watson (*Annals of Surgery*, December, 1905, *Operative Treatment of Tumors of the Bladder*)says "The sum and substance of the result of operative treatment up to the present time may be stated thus: if the operative deaths and rapid recurrences are combined under the head of 'operative failures,' such failures are seen to have occurred in 28.6 per cent. of cases in benign tumors, exclusive of myoma, and in 46 per cent. of cases of carcinoma."

According to the same author, out of 653 cases of all tumors operated upon, 243 were benign and 410 malignant. That the benign tumors recurred rapidly in 20.5 per cent., the carcinomatous in 26.8 per cent., and the sarcomatous in two to eight months in all except two out of fifty-two cases.

Conclusions.—That tumors of the bladder are translatable by the symptomatic hematuria and other symptoms, which do not always permit clinically of a striking difference between them, inasmuch as a small papilloma may give rise to a fatal hematuria as well as a malignant one, seems established. However, one may arrive in certain cases at a precise diagnosis based upon the clinical evolution, the physical signs, and the examination of the fragments expelled. That the benign tumors may recur under two forms, first under the malignant form, a long period of time intervening before the recurrence; and it is a question whether the tumor beginning as a benign one has not become transformed into a malignant one. The actual state of our knowledge of the subject does not at this time permit of this conclusion. Second, a recurrence may take place after a long period of time as a benign one, as in two cases recorded by me with histological findings.

Guyon states the "the cases which I believe have permitted of this hypothesis of a transformation are very exceptional. I have already had an occasion to cite in studying the progress of neoplastic affections of the bladder many examples of vesical tumors of long duration, even up to twenty-seven years, which did not undergo malignant transformation. Consequently one should be very reserved in discussing the question of transformation of vesical growths."

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DISCUSSION.

DR. JAMES E. SADLIER, Poughkeepsie.—Mr. President: I simply wish to report a case that recently came under my observation. The patient was a woman, sixty years of age, married, and upon whom I operated five years ago for malignant disease of the breast, removing her breast. She had had a very nice recovery from that condition and had been in perfect health until February of this year. Since the operation she has removed to a distant state, and when in February of this year severe bladder symptoms set in she applied for treatment to her local physician, and was treated by irrigation and internal medication, until the latter part of May when she came to me in a deplorable condition, with vast quantities of pus and some blood in the urine, great vesical irritability, and was compelled to get up anywhere from twenty to thirty times at night to void urine. Cystoscopic examination of the bladder showed a tumor on the right side, somewhat posterior, but well above the right ureteral orifice. The tumor was about the size of a silver dollar. It was protruding out in the bladder, and the surface had a sloughing appearance. Its base was thick and indurated, and with an alligator forceps through a Kelly cystoscope I was enabled to remove a fragment or two, which the pathologist pronounced to be papilloma undergoing carcinomatous change. In her case I tried the transperitoneal route for operation, as suggested by Dr. Charles Mayo, and as spoken of by Dr. Erdmann, and found it to be a comparatively easy operation. I placed her in the Trendelenburg position, walled off the bladder with gauze from the intestines. The bladder was then incised at fundus and through this incision, which was a liberal one, the tumor upon the inner surface of bladder was easily reached and excised, cutting well out into sound tissue. The edges of the bladder from which the tumor was removed were sutured with No. 1 chromic gut, and then the incision of the fundus was closed, using a No. 1 catgut through all coats except the mucous, and over that a layer of silk suture. A self-retaining catheter was inserted and changed each day, and the bladder was washed out carefully each time. The patient made a perfectly uninterrupted recovery. Cystoscopic examination made within the last few weeks disclosed a perfectly normal bladder, a nice outline where the scar tissue is, and certainly a very nice operative result, following a comparatively-speaking extremely easy operation. Of course, it is eminently unfair to say that this case is a favorable one from the standpoint of prognosis. It is not more than three months since the operation was done, and it is difficult to say what the ultimate outcome in this case will be, but from a purely operative standpoint it proved to be a comparatively easy operation, and her after-care was simple, and recovery very nice.

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DR. JOSEPH F. MCCARTHY, New York.—I would like to say a word or two about fulguration in reference to the growths mentioned by Dr. Erdmann, as I think it offers a large field of usefulness in connection with this subject. This subject is a difficult one, both from the standpoint of operative technic and prognosis. Those who have had anything to do with these tumors know how, unfortunately, they recur with great frequency, and if there be any method of treating the smaller growths which does not involve a radical operative procedure, we should welcome it. Within the last few months, Drs. E. L. Keyes and Beer, of New York, have treated these growths by fulguration or high frequency, and in two cases referred to me by Dr. Erdmann I have used this method. The treatment may be conducted in the office by means of the catheterizing cystoscope without local or general anesthesia. In the cases mentioned, the growths were located at a site remote from where they were originally found by Dr. Erdmann. In one case the growth seemed to me in a perfect line at the site of the probable incision in the bladder on the superior wall of the bladder. There were practically six growths; three at the site of bladder incision—one anterior and laterally, while two more were situated just above and behind the internal vesical sphincter. At this time, after four or five satisfactory treatments, the four growths on the vault have disappeared. In the two growths immediately behind the vesical neck, I have had considerable difficulty in approaching, for the reason that with the inverted type of cystoscope I found the growth so near the vesical neck that I could only see it as one would see the top of a tree over a fence. I could not get at the root. However, I hope to get at it by the use of the aspirating cystoscope of Luys. The growth in the other case has reduced in size considerably. Fulguration or high frequency will remove growths of the same nature outside of the body, and the only deterring factor is the water medium we have to use in dilatation of the bladder. However, if it cannot be done in this way, it may be done with air dilatation, and I have no doubt, although it may be premature to state it, that growths of a benign nature that are small or moderate in size and well pedunculated may be readily and surely removed by this form of treatment. Whether they recur or not remains to be seen.

DR. JOHN W. POUCHER, Poughkeepsie.—I have not anything to offer in the way of argument in regard to operative procedure of papilloma of the bladder, but I want to suggest something I have tried very successfully in the treatment of urethral caruncle. I have treated urethral caruncle for the last five years and have not failed in a single case with a strong solution of argyrol. I had one case I operated on three times, and it recurred just as fast as it was removed. This was a case of urethral caruncle. I cannot explain how, but I tried a very strong solution of argyrol and much to my surprise the tendency

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to hemorrhage, to pain, after perhaps a dozen or twenty applications to the caruncle, disappeared, and remained so for the last five years. After that I treated every urethral caruncle that came under my observation, and I do not think I have had any patients return after I have dismissed them, and the last one was a papillomatous growth of the urethra about the size of a small egg. I had no anticipation of dissipating this large mass with the argyrol, and it was merely an experiment when I began to apply the argyrol. I saw the patient about a week ago, and there is just a little red point that is not larger than a pea present. I have no theory for the dissipation of these growths by the application of argyrol, but as Dr. McCarthy said, perhaps some local treatment might do some good in some of these papillomata of the bladder and I would like to put these cases on record. I would like to have any of the gentlemen present try a strong solution of argyrol and see what their results are. I could not tell what strength my solution is because I make it as strong as a saturated solution.

DR. JOHN W. KEEFE, Providence.—I would like to say a word or two about the use of the cystoscope. I am not wedded to the use of the water cystoscope because in two cases experts failed to find tumors in the bladder on account of severe hemorrhage that occurred at the time when they attempted to use the water cystoscope. With the air cystoscope the growths could be readily seen.

With reference to the transperitoneal operation, it should be performed, it seems to me, more often than the operation just above the pubes in the prevesical space, especially if the patient is fat, where we have a deep wound in which to operate. By placing the patient in the Trendelenburg position one can readily have access to the bladder. If I understand Mayo's description of his operation by the transperitoneal method, it is this, after placing the patient in the Trendelenburg position and walling off the intestines he makes an incision in the bladder in the median line, and he has to make another incision in order to remove the growth. In other words, he has two openings at least in the mucous wall of the bladder. After making an opening into the abdominal cavity, the peritoneum covering the bladder can be separated from the bladder as we separate the peritoneum from the bladder when we do a hysterectomy, and then by having the cystoscope in the bladder at the time, the assistant can, by viewing the growth, force the cystoscope at a point near the growth so that one will know exactly where it lies. He can then grasp the growth with a vulsellum forceps and excise it. These wounds can be closed immediately, and in most of them we have primary union, and the bladder can be drained by the catheter. All of these growths are not malignant.

DR. LOUIS FRANK, Louisville.—As to tuberculosis of the bladder, I think tuberculosis of the bladder is exceedingly rare as

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a primary lesion. It is always secondary to tuberculosis in other portions of the genitourinary tract. So true is this that we can practically always exclude it as a cause of bladder disease.

Speaking directly to the paper, I have been much interested in it for the reason that I have been doing work in bladder surgery myself. Several years ago, probably eight or nine, I think I began to close the bladder primarily after the suprapubic operation, the first case being one in which I did this following the removal of a stone. We have closed a number of bladders, probably some six or seven, following operation for stone. Most of these bladders are infected, and in every instance but one we have had primary union. This procedure has been followed by some of my colleagues with the same result. Of course, a badly infected bladder we do not close, but where we can by irrigation bring about a fairly aseptic condition immediate closure is practical.

My experience with removal of tumors from the bladder is very limited, and confined to one or two cases. In these we were able to bring the growth up by the vulsellum forceps so as to practically have it extravesical, that is up in the wound. The growths were excised, the base cauterized, and the bladder wall brought together, and immediate closure effected. A catheter was kept in for drainage. One case, operated on three or four years ago, has had recurrence. In another case we had associated hypernephroma which led to recurrent bleeding, and a cystoscopic examination was carried out, and the bladder was found to present no evidence of growth, and at the same time we practised ureteral catheterization, and found the hemorrhage came from one kidney which proved to be a hypernephroma. We have used in the last ten of twelve years for all cystoscopic work, since the introduction of the straight Kelly cystoscope, a straight tube for male cystoscopy, and we have found it superior to water distention. The patient is placed in the Trendelenburg position, or the exaggerated lithotomy position, an ordinary bulb is used for inflation. If there is no difficulty, the bladder is readily inflated and a most excellent view can be obtained of all parts of the bladder. The fundus and the portion about the vesical neck is brought into view, and the only cases where any difficulty has occurred is where there is a projecting prostate with cavity or a saculated portion of bladder behind the projection. We have found air distention and a straight cystoscope to answer every purpose. It is of more value than water distension in enabling you to get a good view. In those cases where there has been a great deal of bleeding necessitating continuous irrigation we have many times found it impossible to get a good view of the bladder contents with the lens cystoscope.

DR. MCCARTHY (closing the discussion).—In regard to the air cystoscope the air cystoscope has been pretty well used in the male, and it has been found that if there be any abrasion of the mucosa

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air distention is apt to do considerable damage. In so far as the female bladder is concerned, a straight instrument is all right. A Kelly tube in the hands of a man who knows how to get the proper position works beautifully, but it may prove objectionable to get a patient in that position, consquently the straight aspirating tube of Luys is just as good as Kelly's in regard to the view and much better, in that it aspirates the urine as it comes along and gives a clearer picture. I have a modified prism which gives a magnified picture during the entire operative procedure, at the same time aspirates the fluid from the bladder. That can be done by a small electric motor, with bottle intervening, while the observation is going on, the urine is aspirated, and it does not get to the operative field. With that instrument one may obtain a magnified picture maintained throughout all operative procedures, no urine interfering with the picture as it is being aspirated, and when one approaches the ureteral orifice one can see the urine as it gushes from the ureter. In so far as the introduction of the straight tube in the male bladder is concerned, I regard it as an abomination. Most genitourinary surgeons will tell you that a straight tube is injurious and should never be used in the male bladder. In so far as air dilation is concerned, the air instrument has been pretty well discarded. There is, however, no difficulty with the water distending instrument, and with a proper fitting irrigation attachment the bladder can be clean, and in quite a number of cases of papilloma of the bladder where there was constant dribbling going on the necessary work could be done and the treatment carried out with little or no difficulty.

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PUERPERAL WOUND INTOXICATION AND WOUND INFECTION.

A Historical and Critical Review of Childbed Fever.

BY

HENRY SCHWARZ, M. D.,

St. Louis.

Isolated cases of puerperal fever and series of cases in the practice of single individuals have occurred at all times among civilized nations, but the dreadful epidemics of puerperal fever which carried off child-bearing women by the hundred thousand did not appear until the advent of lying-in hospitals. During the eighteenth century such hospitals were established all over Europe, although a few of these institutions are much older. Pregnant, parturient, and newly delivered women were now crowded together in close and unsanitary quarters, and during these dreadful epidemics it was common to find newly delivered women in the same room and often in the same bed with those dead or dying of septic infection.

When medical men began the study of pathological anatomy and when postmortem examinations became frequent the medical attendants became the principal carriers of infection. The more they engaged in the search after the cause of childbed fever, the more autopsies they held on women who had died of this disease, the more child-bearing women they infected. The total ignorance of the nature of infection led men who were engaged in obstetrical practice to perform or to attend these autopsies, to handle the viscera of the victims, to cut them out and to carry them home for further investigation, and immediately afterward to examine and to attend women in labor without changing their clothes and without more than a superficial washing of hands.

That this was the common state of affairs is illustrated by an article in the *London Medical Gazette*, December 10, 1831, in

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which Dr. Campbell of Edinburgh states that in October, 1821, he assisted at the postmortem of a patient who died of puerperal fever. He carried the pelvic viscera in his pocket to the class-room. The same evening he attended a woman in labor without previously changing his clothes; this patient died. The next morning he delivered a woman with forceps; she died also: and of many others who were seized with the disease within a few weeks three shared the same fate in succession. In June, 1823, he assisted some of his pupils at the autopsy of a case of puerperal fever. He was unable to wash his hands with proper care, for want of the necessary accomodations. On getting home he found that two patients required his assistance. He went without further ablution or changing his clothes; both these patients died with puerperal fever.

In the early part of the nineteenth century now and then, especially in England, voices were raised suggesting that, in some cases at least, the disease might be contagious, and likewise pointing out the apparent relation between puerperal fever and erysipelas, but they were not heeded.

In 1843 Oliver Wendell Holmes published his essay, "The Contagiousness of Puerperal Fever." He had collected an abundance of damaging evidence and arranged it into a most convincing indictment of the medical profession; he did not ask for conviction and punishment for past wrongs committed in ignorance, but he pleaded mose eloquently on behalf of the prospective mothers that, for the future, negligence of proper care in preventing infection be considered criminal. Holmes' appeal to the medical profession was lost, partly on account of the bitter war waged on him and his idea of contagiousness by two leading American obstetricians of the period, Meigs and Hodge, and partly because bacteriology was at the time an undiscovered land, some knowledge of which was indispensable for an understanding of the nature of infection.

Four years later, in 1847, Semmelweis again pointed out the contagiousness of puerperal fever and, although he demonstrated the correctness of his views by reducing the mortality from puerperal fever in the maternity clinics of Vienna, he, likewise, failed to convince the medical profession and he was ridiculed and persecuted. As late as the year 1861 the great Virchow attacked and rediculed the idea that childbed fever could be contagious.

The avoidable sacrifice of hundreds of thousands of women

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went on until finally the advent of Lister and of the antiseptic time, together with the establishment of bacteriology, prepared the medical world for an understanding of the nature of puerperal infection. The old-time epidemics now disappeared, but isolated cases of severe infection and numerous cases of localized infection continued to appear in the best-managed maternity hospitals.

When the writer first became acquainted with German university clinics, in 1879, the antiseptic era was in full bloom; pathogenic germs were suspected everywhere, but their distinctive characteristics were known to very few besides Pasteur and Koch; the means of disinfecting hands and instruments were inadequate, and the teachers had plenty of material to illustrate every form of puerperal infection, like puerperal ulcers, parametritis, perimetritis, phlebothrombosis, and mammary abscess; the severer forms of infection—namely, general peritonitis, pyemia, and general sepsis—were rare, but they were not entirely absent.

The year 1881 worked a sudden change; in that year appeared the first volume of the "Communications from the Imperial Health Bureau." Among a dozen epoch-making articles it contained one by Robert Koch on examination of pathogenic organisms, giving clear instructions about staining bacteria, about pure cultures, and about inoculation; it likewise contained a number of articles on disinfectants and disinfection by Koch and his associates, proving the immense superiority of bichloride of mercury over all disinfectants in use at that time. Bichloride of mercury was now introduced as the main antiseptic agent, both for disinfecting the hands and for douches and dressings; the systematic study of bacteria soon brought order out of chaos; the carbolic spray disappeared, and the antiseptic era was followed by the aseptic one.

Septic infections of any kind now disappeared entirely from the modern maternity hospital; the older classification of the various forms of infection was gradually given up and bacteriological classification took its place. The terms autoinfection and heteroinfection are at present no longer used in the sense in which Semmelweis applied them, and it might be best to drop them from our text-books for the sake of simplicity in teaching. Semmelweis spoke of autoinfection when dead material, such as pieces of placenta or membranes, were retained in the parturient

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canal and by their decomposition caused fever. We prefer to speak of this condition as

WOUND INTOXICATION OR SAPREMIA.

The uterine cavity, under normal conditions, is germ-free, while the lower cervix and the vagina harbor a rich flora of germs of all kinds; all of these germs are saprophytic in character, even if their form is identical with that of pathogenic germs. Any of them, like the hemolytic streptococcus, may at one time have been pathogenic to man, but when found as normal dwellers in the vagina they have lost their virulence and are for the time being saprophytes pure and simple. Were it otherwise, how could the almost entire absence of infection in well-regulated maternities be explained, especially when in most of them no attempts are made to sterilize the parturient canal.

The wound intoxication and the fever are due to the absorption of a chemical poison from the parturient canal, generated by the activity of saprophytes in decomposing dead material. With the removal of this dead material no more of this poison can be formed, and when the system gets rid of the poison already absorbed the patient is cured.

By heteroinfection Semmelweis meant that the virus had been carried to the patient from without; we prefer to speak simply of puerperal wound infection.

PUERPERAL WOUND INFECTION.

In this form the germs enter the living tissues to a greater or lesser depth and multiply in them according to their characteristic habits and to the degree of their virulence. Thus it is characteristic for the bacillus of diphtheria, the tetanus bacillus, and the colon bacillus, as a rule, to develop their colonies near the surface of lining membranes and wounds, while streptococci and staphylococci enter the tissues according to the degree of virulence they possess and the degree of resistance which the tissues offer. Greater virulence does not mean that the respective germ secretes a more potent poison than a germ of lesser virulence but it means that the germ possesses a greater tolerance against the natural and the special antibodies of the human system.

The variation in the degree of virulence is readily studied in the streptococcus, while various germs and combination of

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germs are found to be the cause of the different forms of puerperal infection, but there is hardly one clinical picture of wound infection which the streptococci are not able to produce by themselves. Their virulence changes according to the culture medium in which they grow; roughly speaking, the virulence decreases when the streptococci grow outside of the animal body, and it increases or is restored when they are transplanted from animal to animal.

The dirt that surrounds many parturient women of the lower classes contains, among other germs, plenty of streptococci, but their virulence is low because they have grown outside of the animal body for some time. When brought in contact with the parturient canal they may cause infection of the lacerated perineum and form puerperal ulcers; or they may enter a little deeper and cause a septic cellulitis or even a pelvic peritonitis. These patients usually recover and they seem to develop a certain degree of immunity; this explains why, during the antiseptic period, when there was still considerable mortality from abdominal operations, the operators were a little afraid of the so-called virgin peritoneum and had less fear of infection in women who had passed through pelvic inflammatory troubles.

When, on the other hand, highly virulent streptococci are brought in contact with the parturient canal of the lying-in woman, they at once enter deeply into the tissues where they multiply rapidly, causing general peritonitis, pyemia, or general sepsis. These highly virulent germs are always brought to the patient by the obstetrician or by the nurse; they are often fatal and they are always avoidable except in rare cases in which gonococcus infection follows the bursting of a tube or the squeezing out of its contents during labor, or in which a tubercular focus leads to a general infection.

Puerperal infections are most frequently caused by streptococci, staphylococci, and the colon bacillus, and less frequently by the gonococcus, the pneumococcus, the bacillus of diphtheria, and other germs. It is desirable to make a bacteriological diagnosis whenever that is possible, but in general practice it cannot always be done, nor is it necessary in the localized processes; and it would be well if teachers and writers would adhere to the old classification and divide all infections into the more or less localized infections which usually get well and into the general infections which are often fatal.

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LOCALIZED INFECTIONS.

1. Puerperal Ulcer. 2. Puerperal Endometritis. 3. Puerperal Parametritis. 4. Puerperal Perimetritis. 5. Phlebothrombosis.

GENERAL INFECTIONS.

1. General Peritonitis. 2. Pyemia. 3. General Sepsis (Bacteremia).

The teachings of Semmelweis are now duly appreciated. Hungary, his native country, has honored his memory by having his ashes removed from Vienna and deposited in an honor grave, which the city of Budapest gave for that purpose. This grave is graced by a suitable monument; a table has been placed on the house in which Semmelweis was born; a grand Semmelweis monument has been erected on one of the finest public squares of Budapest. The means for this monument were raised by international subscriptions; the unveiling of the monument took place on September 30, 1906, and was the occasion of a grand international gathering of obstetricians; the final report of how the medical profession of Hungary has honored itself by honoring Semmelweis was presented last fall to all the members of the gynecological section of the international congress, that they might spread the fame of Semmelweis over all parts of the globe.

In the meantime the medical profession of the United States has almost forgotten that Oliver Wendell Holmes has equal, if not greater, claim to be remembered as the discoverer of the contagiousness of puerperal fever. Most of our text-books mention the work of Semmelweis, but do not mention that of Holmes, at least not in an adequate manner; the one pleasing exception being the text-book of Barton Cooke Hirst, who does full justice to Dr. Holmes.

It is true, the memory of Dr. Holmes will always be kept green on account of his prominence in literature and he can afford to do without special honors for his achievements in medicine; but can the medical profession of the United States afford to neglect his claims for universal recognition as the discoverer of the cause of childbed fever and the means of preventing it?

While we deplore the untimely death of the hundreds of thousands of young child-bearing women whose lives would have

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been saved if the appeals of Holmes and of Semmelweis had been heeded by their contemporaries, we excuse the medical profession of that day, however, because without a knowledge of bacteriology we could not expect it to understand the apostles of the new doctrine. No such excuse can be made for the medical profession of to-day; it is fully acquainted with the nature of infection and it possesses reliable means for preventing it, yet the fact remains that in the United States, in Germany, and in other countries thousands of young women die every year from puerperal infection whose lives could have been saved.

MIDWIVES.

In the United States two factors seem to be responsible for this deplorable state of affairs; the one is found in the inadequate obstetrical training which the average American physician receives before he engages in obstetrical practice and the other factor is the untrained and irresponsible midwife. Until recently a good many of our medical schools failed to provide bedside teaching in obstetrics, but conditions are getting better and it seems likely that before long in every part of the United States state boards of examiners will have the power to deny the right to accord state board examinations to graduates of medical schools which fail to furnish a reasonable amount of obstetrical bedside teaching. There is, likewise, reason to hope that these examinations will be made both theoretical and practical.

But assuming that within a reasonable time the obstetrical training of every American physician will be efficient, the yearly loss of thousands of women from childbed fever whose lives could be saved must continue, because a great number, in many localities the greater number, of women are during confinement attended not by members of the medical profession, but by midwives, and because these midwives are, with rare exceptions, permitted to do this work without giving an account of their education and obstetrical training and without state supervision.

In St. Louis out of a yearly average of 15,000 confinements about 7,800 are attended by midwives, and similar conditions exist in other large cities; in smaller cities and in the country the midwives do a large amount of the obstetrical work, but they do not predominate. To say that we do not want midwives in the

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United States is nonsense; they are badly needed and, if properly educated and controlled, they can be a blessing to that part of the population which cannot afford to pay for a nurse, let alone paying for a doctor. A good midwife will take care of normal cases and will act as visiting nurse after delivery and she will do all this for a small fee.

It is our duty to secure the enactment of laws which will regulate and supervise the practice of midwives; their schools should be forced to come up to reasonable minimum requirements; they should be registered on a license obtained by passing a state examination; they should be under strict supervision of the health officers; the scope of their work should be clearly defined; it should be prescribed what implements and material they have to take along to each case and what antiseptic and aseptic measures they must employ; once a year they should be called to the county seat to receive printed instructions and to have these explained.

If this were done the midwives would cease to be the curse which they at present undoubtedly are. The fault, however, rests with the public and the medical profession; the latter should enlighten the former on the situation, which is a danger to public health, and both the public and the medical profession should work together to secure the enactment of much needed laws to regulate the practice of midwives.

If we look over the medical laws of every state and territory in the United States we will find that Louisiana, Missouri, Ohio, Wyoming, Utah, and the Philippine Islands stand alone in requiring an examination of midwives and in providing a fine for practising without a license. Ohio limits the work of the midwives, but nowhere has a state board control over the schools. Louisiana makes special mention that the so-called midwife of the rural district and plantation is not considered as practising midwifery as a profession.

All the rest of the states simply ignore the question with two notable exceptions. Mississippi and Maine do not ignore them, but insist that midwives have a right to practise without license or control. The law of Maine says: "This act shall not apply to midwives, who lay no claim to the title of physician or doctor," and the law of Mississippi reads: "Females engaged in the practice of midwifery are not prohibited from such practice, but are entitled to engage therein without a license."

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SERUM THERAPY AND BACTERIAL VACCINES IN THE TREATMENT OF PUERPERAL SEPTICEMIA.

BY

HENRY SCHWARZ, M. D.,

St. Louis.

THE introduction of serum therapy into obstetrical practice dates back to the year 1895, when Marmoreck's antistreptococcic serum was placed upon the market. Long before that time we had learned that more or less localized puerperal infections cannot always be prevented, but that with rational treatment they usually get well; we had learned that in the severe forms of general infection the germs are almost always carried to the patient by doctor or midwife and we had learned that these cases usually prove fatal, no matter what therapeutic measures we employ.

In our own private and hospital practice cases of severe infection were unknown, but we saw in consultation or had brought into our hospitals cases of severe puerperal infection due to the ignorance or criminal negligence of the obstetrical attendants. We tried to reduce the number of these cases by providing for a better obstetrical training in our medical schools, and by agitating the enactment of laws to regulate the practice of medicine and midwifery.

When antistreptococcic serum was placed at our disposal we hoped that it might cure some of the heretofore hopeless cases, but we soon found out that it failed to do so. Personally, I felt hopeful because in 1896 I used it in a case of severe pyemia and the patient recovered; no bacteriological diagnosis was made in that case. Since that time I have used the various antistreptococcic sera in many cases of severe streptococcus infection in which the diagnosis was based on cultures from the patient's blood and without a single exception these cases have died; of course streptococci are found in the blood in the partly localized infections oftener than was formerly supposed, but I did not employ serum treatment in these cases.

While continuously improving obstetrical asepsis by the use

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of rubber gloves and other means, we continued the use of antistreptococcic serum in these hopeless cases because we have neither the right nor the heart to let a young mother die without keeping up the fight for her life to the very last and because theoretically antistreptococcic serum is the logical remedy in these cases; and we still hope that the manufacturer may some day supply us with an effective serum.

Such was the state of affairs when bacterial vaccines were recommended for the treatment of puerperal infections; stock vaccines were placed upon the market and the practitioner was asked to use them. Before long it was claimed that they worked wonders in the severe acute forms of infections and practitioners began to use them indiscriminately. About a year ago I became alarmed over this indiscriminate use of bacterial vaccines; I feared that the vaccines would be used in sapremic cases and in cases of mild infection and thereby gain a reputation which they did not deserve, and that the failure to cure cases of acute infection would prejudice against their employment in their legitimate field of chronic infection and prophylactic vaccination; and I also feared that the marketing of bacterial vaccines would prove so easy and so profitable to the manufacturer that he would give up all attempts of providing us with a better serum. Therefore I warned against the use of bacterial vaccines in cases of acute puerperal septicemia in a paper read before the Saint Louis Medical Society last April which was published in the bulletin of that society April 30, 1910.

I argued that the use of these vaccines in acute cases was ill advised; that their use in the partly localized puerperal infection required great caution because an excessive negative phase might prove disastrous, and I insisted on the necessity of bacteriological diagnosis in every case. Since that time several publications have appeared advocating the use of vaccines in the most fulminating forms of infection, notable among which is the article of Dr. Deaver in the August number of *Surgery, Obstetrics and Gynecology*. Deaver has used autogenous vaccines in acute cases of streptococcus and staphylococcus infections. The streptococcus infections died promptly as was to be expected; the staphylococcus cases recovered, but I suppose that this was due to the other measures employed and to the fact that they are naturally less fatal.

The report of the committee of the American Gynecological Society on the value of bacterial vaccines in obstetrical and

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gynecological practice, read at the meeting of that society in May and published in July of the present year, is very conservative and concludes by stating, "It would appear that the greatest prospect for its successful use is in chronic local infections, and that it offers very little hope in acute general infections where aid is so urgently needed."

If bacterial vaccines can cure acute infections it ought to be easy to prove the fact by animal experiment. I therefore made the attempt to ascertain the curative and prophylactic value of streptococcus vaccines in rabbits. It is well known how susceptible rabbits are to streptococcic infection; in fact manufacturers increase the virulence of their strains by passing them through rabbits before inoculating horses with them.

Not wishing to repeat experiments which I supposed might already be on record I asked Parke, Davis & Company and the H. Mulford Company for information on this point and solicited their cooperation. Neither of them had records of such experiments. I therefore asked Dr. C. Fisch of St. Louis, a competent bacteriologist, to make the eperiments for me and Dr. A. P. Hitchens, director of the Mulford Company's biological laboratories at Glenolden kindly volunteered to repeat and extend them. In the experiments conducted by Dr. Fisch the strain of streptococcus used was kindly furnished by Parke, Davis & Company.

From a twenty-four-hour serum-agar culture emulsions were made by emulsifying one loop of culture (always the same loop, holding about 1 mg.) with 10 c.c. of salt solution. The number of colonies in 0.0001 c.c. of this emulsion was 1500; for vaccine preparation the emulsion was heated to 58° C.; the time for heating was one hour; cultures made from the heated emulsion were always negative; it was found in the preliminary tests that 0.1 c.c. of emulsion would kill an average rabbit in three days, corresponding in time to the fatal streptococcic infections in man. This quantity of emulsion was therefore used in the inoculation of the animals during these experiments.

The autopsies were limited to the examination of the blood drawn from the heart of the animal soon after death; all cultures showed streptococci. The vaccinations were made intravenously, intraperitoneally, and subcutaneously. The experiments are not quite completed and the detailed data will not be published until final reports are received from both Dr. Fisch and Dr. Hitchens. The results so far reached are these:

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1. Vaccination after inoculation has no influence on the infection; all animals died in three days, the same as the control animals.

2. Vaccination simultaneous with inoculation has no influence on the infection.

3. Prophylactic vaccination produces immunity, but it must extend over a considerable period and vaccination must be stopped ten days before inoculation.

On July 24, 1910, systematic vaccination of nine rabbits was started by beginning with 50,000 killed streptococci and repeating vaccination every four days in increasing doses until by August 28 three millions were reached; three of the animals were vaccinated subcutaneously, three intravenously, and three intraperitoneally. In two animals from each series vaccination was stopped August 28, and on September 7 all six of them together with a control animal were inoculated with 0.1 c.c. of the virulent emulsion with the following results:

Rabbit No. 20.—The control died after three days as usual.

Rabbit No. 14.—Intraperitoneal series died after four days.

Rabbit No. 15.—Introperitoneal series died after five days.

Rabbit No. 16.—Intravenous series died after five days.

Rabbit No. 17.—Intravenous series died after five days.

Rabbit No. 18.—Subcutaneous series alive and well after eight days.

Rabbit No 19.—Subcutaneous series alive and well after eight days.

In all animals which died the blood contained streptococci, while blood taken from the ear of the two surviving rabbits proved sterile. It seems that intravenous and intraperitoneal vaccinations are worthless, although they did change the course of infection from three to five days. We were unable to find ill effects from the excessive use of bacterial vaccines in normal rabbits; 50,000,000 caused no disturbance, while 200,000,000 made the animal sick for a few days so that it refused food.

Although these experiments are at present far from complete, I venture to make the following suggestions regarding the use of bacterial vaccines in puerperal infections:

1. The employment of bacterial vaccines must be based on bacteriological diagnosis.

2. In the more or less localized infections, such as those of the urinary tracts by the colon bacillus, pelvic inflammation caused by the gonococcus and the various staphylococcus infections,

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vaccines treatment has a legitimate field and can accomplish much for good.

3. In strictly local streptococcus infection the use of vaccines is unnecessary, while in partly localized streptococcus infections the use of vaccines is dangerous.

4. In acute infections of any kind the use of bacterial vaccines is contraindicated.

5. Prophylactic vaccination against streptococcus infection is possible, but it must be started many months before the patient is exposed to infection.

In regard to antistreptococcic serum and antistaphylococcic serum I would suggest that they find logical employment in acute infections of their respective germs, and that manufacturers should try to provide us with sera which have been tested as to their animal efficiency; this is done with some of the best sera in the European markets and they seem to give results not quite as hopeless as do the sera at present manufactured in the United States.

DISCUSSION ON THE TWO PAPERS OF DR. SCHWARZ.

DR. E. GUSTAV ZINKE, Cincinnati.—Mr. President: This evening has been to me, and I have no doubt to all of you, one of great and unusual interest. We have listened with delight to the magnificient exposition of the progress of gynecology, obstetrics and abdominal surgery. In commenting on this splendid presentation of the improvements made in obstetrics, especially in regard to puerperal infection, Dr. Schwarz certainly has given us a clear idea of what puerperal fever really is. To-day puerperal fever is pretty well understood. When I was a student every obstetric teacher had his own explanation of puerperal fever, and seemed to take great delight in differing from all others. But to-day, those who study their cases of puerperal fever thoroughly will, almost invariably, be able to determine the character of the infection before them. It is true, prophylaxis is of the greatest importance. But the recognition of the nature of the infection dictates the treatment.

The doctor has spoken of puerperal or wound intoxication, which results from the presence of the saprophytes within the parturient canal. This form of infection is, invariably, characterized by a slow rise in temperature, and for days the pulse remains good and near normal. This is a pathognomonic symptom of this form of puerperal fever, wound-intoxication, a sapremia. It does not mean much if the obstetrician recognizes the condition and exercises proper care. The patient can be readily relieved of the complication by simply irrigating the parturient tract copiously,

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thus washing away the necrotic or decomposing débris from the uterine cavity and the vagina. The curet should not be used either dull or sharp. Flushing the parturient tract freely with a weak antiseptic or a sterilized normal saline solution is the best treatment in these cases. A temperature then, which rises slowly, and a pulse which begins to go up gradually only after a few days, remaining full, good and regular, means a wound-intoxication, a sapremic infection, and should be treated by prompt and gentle cleansing of the parturient tract. The temperature goes down almost immediately, and the patient is often permanently relieved with one irrigation. In some cases this procedure may have to be repeated within twenty-four or forty-eight hours, or three days, all depending on how much of the offending material has been left in the parturient tract. If a case like this is permitted to go on unnoticed, the action of the saprophytes continues, they also greatly increase in number, the necrosis becomes more extensive and eventually involves not only the entire endometrium but also the uterine musculature, and then there follows, at the end of a week or ten days, a chill lasting perhaps half an hour, and a temperature running up to 105–6° F., with a pulse of 130 to 140. Even here, if the infection is purely of a saprophytic character, a cure may be accomplished, by thorough and repeated irrigations of the entire birth canal. But when the uterine musculature has become extensively involved—a putrescent uterus—the case has assumed a very serious aspect.

It is different when we deal with a so-called wound infection—septic infection—when the streptococcus septicus has found its way into the parturient tract. The streptococcus may enter the system through a tear in the perineum, or lacerations in the vagina and in the cervix, but in the majority of these instances the infection remains more or less localized, for a time at least. But when the streptococci invade the uterine cavity, the placental site furnishes many open doors for their entrance into the deeper structure and thence into the system. The blood- and lymphvessels constitute the avenues along which they travel, prosper and multiply. When this occurs the patient is at once seriously affected. Curetment and irrigation of the uterine cavity will not prevent grave mischief. It is true, even in these cases, that the parturient tract must be kept clean to prevent further invasion of the poisonous germs. But the patient is seriously injured by the first invasion of the microorganism. The action of the streptococci displays itself in the various forms of septic infections according to the route along which they travel. Other germs, the staphylococci, the diphtheria bacilli, the colon bacilli, and the gonococci perform a rôle intermediary between the germs of decomposition and the streptococcus septicus. Their activity is not as violent and vicious as that of the streptococci and they are more amenable to treatment, although the local and systemic effect is severer in character than that of the

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saprophytic infection. All of this shows how necessary it is to guard against infection, from start to finish.

The clinical picture of a saprophytic intoxication differs strikingly from that of streptococcic infection. In wound-intoxication the symptoms are rather mild in the beginning. The pulse remains good and is hardly disturbed during the first few days; the temperature slowly rises, and may fluctuate between 101–103° F., at the end of the first week; and throughout this time the patient complains little or not at all. But in a streptococcic or so-called septic infection you have a clinical picture at once violent and excited. The entrance of the septic germs into the the system is marked by a severe chill; the pulse at once goes up to 120 or 130, and the temperature rises rapidly to 104–6° F. This is the difference in the beginning between the two forms of puerperal infection. The one, if promptly recognized and properly treated, is of short duration and ends in recovery; the other, even if diagnosticated early, is difficult of treatment, long in duration, often fatal, and, if death does not occur, ends in temporary or permanent invalidism.

DR. J. H. CARSTENS, Detroit.—There is something still dark about this question of puerperal septicemia. I called attention to it at the Saint Louis meeting of the American Medical Association. You may talk about saprophytic infection, about streptococcus infection, gonorrheal infection, and diphtheritic infection, but still there is some kind of infection that we do not know about and we do not understand. The real bad cases of puerperal infection that we get are in women who have absolutely no symptoms. There is no infection in the uterus, as Dr. Schwartz so beautifully has shown us, apparently; there is no secondary abscess in the broad ligament which may break into the rectum or below Poupart's ligament or somewhere else. There is no milk-leg or phlegmasia, but simply the woman, five or six days after confinement, gets a severe fever. You examine her, you can find nothing. You talk to her and she says she is all right. You put a thermometer in her mouth, and you will find she has a temperature of five or seven above normal. You examine the pelvic organs and find there is no swelling; there is no endometritis; there is no infiltration; there is no particular disturbance in the uterus; there are no abscesses in the uterus, and still the woman has symptoms. The uterus is about the right size, and that woman goes on week after week for six weeks or seven weeks, or even eight weeks, with a temperature varying from 105 to 107°, and you ask her when you see her, "How do you feel?" "I am feeling fine." She eats and she drinks. There is perhaps only one symptom she has. She seems to be kind of nervous and restless. You can examine the uterine discharges and you find nothing except a few saprophytes or a few staphylococci. But these germs do not cause the trouble. That woman will go on week after week, and sometimes she will recover, and sometimes she will die. Prob-

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ably 30 per cent. of them die and the rest get well. Now, what is that? It is not an infection due to the staphylococcus, to the streptococcus, to the gonococcus, to the diphtheria or colon bacillus. It is something we do not know about—at least, I do not. I hold that there is some specific microorganism that causes a certain virulent kind of puerperal fever, and that organism has not as yet been isolated.

DR. F. W. SEARS, Syracuse (by invitation).—I wish to rise and try to emphasize what Dr. Zinke has put before us. I do not know whether we all appreciate what he has said here tonight or not, but he has given us a picture that is absolutely correct according to my ideas, and it is so absolutely clear that I would like it to sink into the heart of every one present. He has given you a perfect picture of puerperal sepsis. I had some of the abuse (which Dr. Holmes perhaps had) twenty-four years ago in my early practice here. I had one of those cases which the doctor told us about of puerperal septicemia, the patient having been turned over to me to die. I had gone over the history of obstetrics very thoroughly from the time of Semmelweis down. I had read the *London Lancet* from 1845 down, and I was convinced that there was a form of sapremia which could be cured. This patient got well by irrigating the uterine cavity. When I presented the facts of the case to the Onondaga County Medical Society the position I took was very much opposed. But this was the first case in which irrigation of the uterus was resorted to for this condition. That was twenty-four years ago. After this I saw a woman in consultation who had been confined, and who in less than twenty-four hours began to have a rapid rise in pulse rate and a gradual rise in temperature which has been described, with distended abdomen. Your President, Dr. Miller, also saw this case. I was called in two days after the confinement and we recognized that the woman had septic infection. She was transferred to the hospital and watched until she died. A postmortem examination was held. The picture was a clear demonstration of what you have heard this evening. Beginning on the left side of the cervix was a fan-shaped induration, spreading into the broad ligament, and up the veins with great plaques of lymph over the viscera of the abdominal cavity. The uterine cavity was absolutely clean. That picture was to me a simple demonstration of one I had been taught and was the condition we get in these cases. There is another lesson, and I wish this association would try and teach it, that it is very necessary for the general practitioner to wear gloves in the practice of obstetrics. If we as surgeons wish to cut down the mortality rate we must wear gloves in all cases. You will go into houses where medical men who have been handling cases of diphtheria, scarlet fever, and erysipelas, and yet they do not see the importance of wearing sterile gloves, which, I believe, is of more advantage in obstetrics than in surgical practice, because the

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surgeon as a surgeon is conscientiously and constantly looking out for his hands. The medical man, on the other hand, is more apt to be careless in this respect. It is all important for us to teach not only surgeons to wear gloves, but medical men who take care of cases of obstetrics, and they should be taught the importance of wearing them. In this connection, and speaking of the literature and history of these cases, I wish to relate a conversation which I had with Dr. Lusk on this subject early in my practice. Dr. Lusk was invited to read a paper against the antiseptic theory of obstetrics in Philadelphia. He was thoroughly convinced that the antiseptic theory was false until he began to read up the literature, and then he said after reading the literature and writing his paper, that he had changed his views and presented the other side of the subject.

DR. THERESA BANNAN, Syracuse (by invitation).—There are two points I would like to bring out in connection with prophylaxis which appear to me to be of some weight. The first is the third stage of labor with the Credé method and prolonged massage for at least an hour after the expulsion of the placenta. I do not know how extensively it is permitted in the practice of Dr. Schwarz and Dr. Zinke, but massage of the uterus is continued through the puerperium. The nurse practises it to keep up the tone of the uterus. The uterus relaxes after labor. The other point is allowing the patient to get up to answer the necessary calls of nature.

We speak of pelvic drainage, and it would seem to be indicated following labor, and yet I would be interested to know whether it is customary in the practice of physicians to keep these patients in bed, as has been done, and catheterize them, as I did the first five years of my practice, but which I never do now under any circumstances.

DR. JOSEPH PRICE, Philadelphia.—I have not had the pleasure of discussing this subject for some years. For a few years I was constantly on the floor, and while I do not care to repeat the old discussions I have made on this subject, still I wish to say that we were persecuted in about every possible way. You are all familiar with Dr. Holmes' patience, and I am frank to say if I had so many favorable allusions made to me and my work as have been made in reference to Dr. Holmes I would consider it a beautiful monument to my memory. In this connection I wish to say that we did all in our power for a quarter of a century to disgrace the memory of Meigs and Hodge, and I think we succeeded fairly well. There were many, many practitioners who questioned the motives and results of Dr. Holmes. At that time we recognized the dangers of puerperal infection and the decimation of our women and children, and we went about in an effort to minimize and reduce the mortality, and we succeeded in reducing it just as our distinguished friend and teacher succeeded in Cincinnati in reducing his mortality

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to *nil*. I remember very well the utterances of Dr. McMurtry a quarter of a century ago, when he suggested that the puerperal woman should be treated precisely as we would treat a case of ovariotomy—namely, as a surgical case, and at that time he pointed out the importance of making precisely the same preparation for delivering a woman as we would make for the removal of a cystoma or fibroid tumor of the uterus. The practices of Rohé of Baltimore, McLean of the Sloane Maternity, and our work at the Preston Retreat, and Richardson of Boston, gave the same results in reducing the mortality to *nil* and demonstrated that it was dirty to practise obstetrics in the manner in which it was previously done, examining women with dirty finger-nails and unclean hands, or without proper toilet. It was the general practitioner who was largely to blame for the great mortality which formerly obtained, but which does not obtain to-day where aseptic midwifery is practised. Many of you will recall that some of our medical colleges were dirtier than the average livery stable, and that medical education of a great many men began in filth. Medical colleges ought to be cleaner than churches. There is not that attention paid to cleanliness in our medical colleges that there should be. We must look upon the placental site and injuries to the cervix as wounds, and from the placental site clear to the perineum as wounds.

This discussion this evening has been the first scientific and generous admission of the fact that in the last two decades toilets ought to be made antepartum. I venture to say that to-day 90 per cent. of the American teachers of obstetrics are holding ing fast, as previously, to their postpartum toilets and are condemning in a feeble way the practice of toilets. The Preston Retreat was closed several times for ten days at a time in order to give patients a chance to recover from infection that existed. When we began to admit women, as they do now in the receiving wards of surgical institutions, and gave them a bath and douche while waiting to be delivered, and made all possible preparations to make these women clean, and their parturient canal clean, we delivered a series of something like 2,000 women without a death. (Applause.) In alleys and in courts we delivered 1,500 women. Students were told that they could examine these women, palpate and auscultate as often as they wished, provided they made a toilet with soap and water before and after each and every examination. We were not only practising cleanliness, but teaching others how to be clean. The slightest perceptible degree of infection was noted in those women. And this has gone on for over a quarter of a century without puerperal infection even in the courts and alleys of Philadelphia. We recently lost two women from postpartum hemorrhage, something that has not happened for years. The boys who do this work come from universities and as far as New Orleans. Students from the University of Virginia have come in goodly numbers during

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the summer vacation. One student will attend as many as ten cases of labor without perceptible infection. They are taught severely and rigidly that they are not to touch a woman until they have used soap and water and bichloride of mercury. There is a class of obstetricians scattered over the country who are afraid to scrub a dirty vagina. A woman who has previously borne a child, who has overdistention and relaxation of the pelvic floor, may have a variety of germs in her vagina, such as the bubonic plague bacillus, the anthrax bacillus, or the tubercle bacillus, and yet you will find practitioners and teachers of obstetrics who think it is a scientific error to remove these germs from the vagina. They are just that stupid. It is a pity their cords were ever tied. (Laughter.)

The two papers presented by Dr. Schwarz have been exceedingly interesting. They are important contributions because they teach practitioners how to save mothers and children, and in this connection I wish to say that early in my professional life the decimation of our women was appalling. At the present time doctors get careless occasionally and now and then in Philadelphia I am asked to see a case of virulent puerperal infection. I had two cases in one day about a year ago. I was called to see a woman at the Hebrew Maternity in the evening who had a temperature of 105°. She had been pushed back into the corner of the ward to die. I found her entire abdominal cavity and her pelvic viscera disorganized and riddled by suppuration. I did a general cleansing, made a careful toilet with salt solution, left her abdominal cavity open, resorted to a huge gauze drainage, and that woman got well without a ripple or jolt. I have saved lives of large numbers of women who had puerperal infection, and you will find reports of such cases in our transactions and reports of others in the transactions of the Southern Surgical and Gynecological Association. You will find reports of cases of multiple abscesses of the uterus by Davis, by Cartledge, and by myself in the transactions of these two associations. We found beautiful yellow abscesses studding the fundus of the uterus, and in my own cases these abscesses were opened and cleaned and drained. Very often I put the uterus in a gauze mitt column and let it come through the lower angle of the incision. The open treatment I practise so much, but dislike more, because it is not ideal surgery. Ideal surgery does not usually call for drainage, but the surgery that saves life we must practise.

I want to allude again to Dr. Zinke's story of what he had accomplished by cleanliness and in teaching cleanliness to medical students. You remember how common it has been for a doctor to lose five or six or seven cases. In those days it was the rule to wash the hands after doing work, but never before. (Laughter.) It was the same practice with the surgeon at that time.

DR. ROLAND E. SKEEL, CLEVELAND.—For some twelve or fifteen years I taught aseptic obstetrics and I do not fail to teach asepsis now whenever I happen to be called to see a case of

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puerperal sepsis. Instruction in aseptic midwifery is not needed by such men as Schwarz and Zinke and the practice of obstetrics is not in the hands of such men as Schwarz and Zinke. The great mass of obstetric cases are attended by the general practitioner and it is he who is not sufficiently impressed with the importance of asepsis as applied to obstetrical practice. So far as the medical student is concerned it is immaterial whether he witnesses one obstetrical case or 100 hundred in so far as the application of asepsis to the handling of patients is concerned. It makes a difference of course with his knowledge of the mechanics of obstetrics but not in his knowledge of aseptic obstetrics. It is true I am afraid that the mortality rate of obstetrical practice is high and that the morbidity rate is very high, and it is a disgrace to the profession that it is so, but the members of the profession as a whole are not to blame for it. So long as obstetric work is relegated to the general practitioner, the men who treat scarlet fever, erysipelas and diphtheria, who open boils and drain abscesses how in the name of common sense can we expect to obtain much greater freedom from puerperal infection. Instruction can do good only when it is repeated so frequently and is kept in front of the student so constantly that they develop an aseptic conscience. Time after time I have been asked to see cases with ex-students of mine who examine lying-in women almost without washing their hands and that after I had tried hard to teach asepsis and drum it into the heads of such students one day after another. When taken to task for their careless method they replied that inasmuch as they were paid scarcely anything they could afford very little time or material in preparation for obstetric work cases. Therefore all the blame does not rest upon those who teach obstetrics but upon those who disregard the teaching they receive. It is gratifying to know that all women who are infected do not die because nature is frequently very kind even when the practitioner is very dirty and there is some consolation in the fact of our constantly improving conditions and also that under the restrictions now imposed in our hospitals a careless or reckless physician cannot go in and destroy a patient because of faulty aseptic technic. He may still be bad enough to have a high morbidity rate but he must have no mortality rate if he continues in hospital practice. This association can do more good by emphasizing the faulty conditions surrounding the practice of obstetrics than by criticising the teaching of obstetrics because that department is as well taught to-day as surgery, gynecology or any other specialty in medicine. So long as conditions are such as they are in private obstetric practice among the people in moderate or very limited means we will continue to have a tremendously high mortality rate in spite of what may be one by associations like this one.

DR. E. GUSTAV ZINKE, Cincinnati.—The remarks made by my friend, Dr. Price, are responsible for my reappearance on the floor. What he has said is true, but that does not affect the

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teaching of obstetrics. I could not teach obstetrics as well as I do, did I not earn my living by practising gynecology in addition. It would be impossible for me to be here, Mr. President, were I to limit myself to the practice of obstetrics. The remuneration for obstetric cases is so meager and miserable that it constitutes one of the principal reasons why so few men practise obstetrics. I have taken it upon myself, however, to teach obstetrics honestly and as thoroughly as possible; and am free to confess that my practice, at this time, is limited mostly to consultations and operative work in obstetrics.

DR. SCHWARZ (closing the discussion).—I am much obliged to the gentlemen for the discussion which my papers have brought out. I knew I would bring out a good discussion. I feel unable to answer all of the points that have been touched on. In fact most of them were brought out in the paper, and it is unnecessary to repeat them. Some of the remarks that have been made were not exactly pertinent to the paper, but our President was very lenient in allowing the discussion to spread, so I will simply say, in answer to the remarks made by Dr. Bannan, who asked about the advisability of washing out the uterus for a considerable time and of continuing more or less effort at massage in order to keep up the tone of the uterus during the first few days, that practice is very commendable. It is the only sensible practice; it is the only way in which I have ever been taught or do teach. The original Credé's method of handling the third stage of labor is to wait for a number of contractions after the delivery of the child, and then express the placenta, and keep the hand over the uterus for a considerable time. We have always taught students and midwives and nurses to watch the uterus for at least one hour before the binder is applied, and I believe the doctor is right that the changing of the binder does assist in keeping up the tonicity of the uterus. Too much cannot be said about the careful management of the third stage of labor and to keeping up the tonicity of the uterus so as to prevent infection by having large thrombi in the sinuses, or the occurrence of relaxation and hemorrhage. We guard against these conditions. It is a universal custom to watch the uterus for a considerable time after delivery.

With reference to the second question of Dr. Bannan, as to whether we should allow patients to get up out of bed to answer the calls of nature, that is a matter of opinion. Some of the best men in the profession teach that patients should be allowed to get up at once. There are some men who allow women to get up, after a Cesarean section or other laparotomy, the day on which they were operated to answer the calls of nature. But that depends very largely as to whether or not a woman has any wounds, has any tears, that may be disturbed in getting up, and as to whether or not she is able to perform these functions in bed. If she is not, and there is no contraindication in her condition, I would permit her to use the commode on the second day. It is

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not usual for these patients to have their bowels move before the third or fourth day. By that time it is safe for them to use the commode if they feel inclined to do so. Some women cannot urinate until they get up. There is less harm in getting them up than to catheterize them in bed, and in some cases it would be a hardship for the doctor because he would have to go and do this work. Allowing the patient to get out of bed works both ways.

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ADENOCARCINOMA OF THE KIDNEY.

BY

J. GARLAND SHERRILL, M. D.,

Louisville, Ky.

(With seven illustrations.)

In the earlier reports upon tumors of the kidney the writers are not at all clear in their nomenclature and it is evident that considerable confusion existed in their minds as to the character and origin of these growths. The term cancer then included sarcoma as well as carcinoma. We also find in use the terms scirrhus, encephaloid, colloid, and the like, with but little reference to the histogenesis of the tumor structure. Even at present, with our increasing knowledge of pathology, difficulty is found in properly classifying some of these growths, owing to their cellular structure partaking strongly of the nature of carcinoma in one portion, while in close proximity will be found a structure quite similar to sarcoma. There is also a class of tumors in which the cellular elements are of such great variety that the growth cannot be properly placed in any of the usual groups, hence the term "mixed tumors" has been placed to this class. Under this head may be placed embryonal adenomyochondrosarcoma, teratomata, and the like.

Adami(1) says "that while pure adenomas showing no tendency to reversion are found in the kidney in common with ovary and testes that in this organ are met a remarkable series of transitional tumors. Tumors in certain areas are definitely of adenomatous type, in others formed of solid cell masses which are not truly adenomatous because, on employing Mallory's stain, we find that here and there connective-tissue fibers are present between the cells. These portions are of the nature of alveolar sarcoma and, on careful study, we can make out the transition from the truly adenomatous to the alveolar sarcomatous areas. And from these latter areas we may pass to regions of purely sarcomatous type, round, or even blunt spindle celled. The picture is an extraordinary one, wholly at variance with the older views of the sanctity of sarcomatous and carcinomatous prop-

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erties. Here absolutely without any manner of doubt a tumor shows transition from carcinomatous to sarcomatous characteristics. The condition has been regarded as inexplicable, has been labeled carcinoma sarcomatodes or sarcoma carcinomatodes, has been treated as ne'er-do-weel member of the family, and too often left out of account in general discussions upon the family relationships of neoplasms. Some have thought to dismiss these cases by ruling that the mesoblast cannot form true gland tissue and true adenomas or carcinomas; that wherever, as in the kidney, we obtain typical gland tubules these must be of epiblastic or hypoblastic origin; others have denied the transition, but the fact is that such transition occurs and is to be found in tumors of just these organs as, again, in the endothelioma."

The great variety shown by renal growths renders proper classification rather complicated; the histological division will serve our purpose.

1. Those derived from the mesoblast: lipoma, fibroma, enchondroma, osteoma (?), angioma, lymphangioma, sarcoma, angiosarcoma, endothelioma, perithelioma, or perivascular angiosarcoma, and combinations of these types.

2. Those of epiblastic origin: adenoma, cystoadenoma, adenocarcinoma, and carcinoma, including epithelioma.

3. Hypernephroma.

4. Mixed tumors: embryonal adenosarcoma, teratoma.

It is not the purpose of the writer to enter into a discussion of histological characteristics of the different groups of these growths. Since Grawitz described in 1883 tumor adrenalis aberrantes or hypernephroma that type of tumor has received a large amount of attention from the profession. The members of this Association are quite familiar with its literature. I have found, however, perhaps from its rarity, that adenocarcinoma has but rarely been mentioned.

Rokitansky(2) says "Carcinomatous growths occur frequently in the kidneys and in the primary form. This is particularly the case with medullary cancer which we find attaining large size, whereas alveolar and hyaline cancer are extremely rare." Marc d'Espine,(3) during thirteen years, found two fatal cases of cancer of the kidney among 889 deaths from cancer, or 0.3 per cent. Willigk(4) found from postmortem 4.6 per cent. of carcinoma to be renal, secondary cancers, of course, being included. Virchow(5) gives five-tenths of 1 per cent. as the propertion of malignant neoplasms which affect the kidney in the cases

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occurring in Wurtzburg during four years. Three cases of cancer of the kidney were registered in ten years in Virchow's Clinic at the Charité Hospital, at Berlin.

Steiner(6) found four cases in 100,000 children in the Children's Hospital at Prague.

Kelynack(7) has carefully searched the *Pathological Record* of the Manchester Royal Infirmary and found nine cases or 0.19 per cent. of death from various causes. He thinks 2 to 3 per cent. a fair proportion of malignant growths of the kidney to malignant disease of all other parts. He collected 306 cases of renal tumors from all sources divided as follows:

Sarcomata,	115
Myosarcomata,	22
Fibromata or lipomata,	15
Adenomata,	12
Carcinomata,	142

making a proportion of 46.4 per cent. carcinomata, the exact variety not being given. He frankly states that table is not accurate.

D. M'K. Dewar(8) reports a case of adenocarcinoma of the kidney undergoing colloid degeneration. Male, forty-two years. Two weeks prior to admission had blood in his urine, at first profuse but became quite clear in four days. At no other time had he noticed any abnormality in his urine nor had he ever suffered any pain or uneasiness of any kind. Was always in good health and gave nothing of note in his family history. Examination revealed a large hard swelling in the right renal region about the size of an ostrich egg with a nodular surface, three distinct bosses being felt. The renal mass moved with respiration and could be pushed backward and also inward. There was neither pain nor tenderness on pressure, nor did any movement or position produce any dragging sensation or, in fact, any inconvenience. The heart and other organs were absolutely normal; urine slightly acid, specific gravity 1020, no albumin, sugar or blood.

On lumbar nephrectomy the growth was found to extend along the course of the ureter and that tube was ligatured at a level of 2 inches below the site of the ligature of the renal vessels. The operation was entirely extraperitoneal and a drainage-tube was inserted. By the end of the first day 13 ounces of urine were drawn off and the patient next day passed

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32 ounces without inconvenience. The daily average until he left the hospital was 45 ounces. Recovery in nine weeks. At no time was any abnormality found in the urine while in the hospital. On section the kidney presented its normal appearance in the upper third and in its lower extremity for about 2 inches square; the rest of the organ was replaced by a firm nodulated growth of a dirty whitish-yellow color. The microscope showed an adenocarcinoma undergoing colloid degeneration.

This writer states that while cancer of the kidney is by no means rare colloid degeneration is very uncommon, only one specimen being found in the Museum of the Royal Infirmary and it was obtained postmortem over thirty years before. Dr. Newman, in discussing this report states that only five cases of colloid degeneration of renal tumor have been recorded by Rokitansky, Gluge, Dickerson, Schuppell, and a fifth by Newman in his "Surgical Diseases of the Kidney."

D. Newman(9) reports case of rapidly growing alveolar carcinoma of the right kidney with beginning colloid degeneration. Male, fifty-three years. Admitted December 11, 1902. In January previously was operated upon for right inguinal hernia. In the following March began to suffer pain in both loins, chiefly in the right; also pain in the region of the bladder, but this was occasional, not constant as the renal pain appeared to be. A few days after the onset of pain the urine was noticed to be darkly tinged with blood and a number of clots were passed. This ceased in a few days. Some relief followed, but the pain in the loins never entirely ceased. Intermittent hematuria, intervals becoming shorter—the hemorrhage occurred every four or five days and it was least when the patient was recumbent. Examination showed tenderness in the inner portion of both hypochondriac regions. Right kidney appeared somewhat increased in size, not to a marked degree, mobile, and painful on pressure. The left appeared to be normal in size. Urine clear, specific gravity 1010, a trace of albumin, no blood nor other abnormal ingredient. On the day following the urine was deeply stained with blood and considerable difficulty was encountered in clearing the bladder for cystoscopy. Upon second examination two days later blood was seen to come from the right ureter. Ureteral orifices healthy.

Lumbar nephrectomy January 7, 1903. Growth limited to the parenchyma of the kidney Immediately after the operation the hematuria ceased. Patient made a satisfactory

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recovery. The quantities of urine for each twenty-four hours after the operation was as follows during the first six days: 22, 28, 45, 44, 73, and 105 ounces, and after that it varied from 70 to 90 ounces The excised kidney was occupied by a tumor the size of a small orange. This protruded from the outer side of the organ and involved the parenchyma only. The pelvis and ureters were free. On section, the growth was extremely soft, almost pultaceous, but on hardening, when complete section was made, the tumor proper was found to be increased in bulk by numerous hemorrhages into its substance. The growth was composed of large alveoli lined by irregular large-celled multinucleated epithelium, and this was arranged sometimes in single rows; at other parts the cells were three or four deep, while the center of the space was occupied by clear, colorless material. The septa of the alveoli were composed of very delicate strands of fibrous tissue and in many parts several alveoli had coalesced to form larger cavities. Many of these larger cavities were filled with blood-corpuscles. The patient was reported well one year afterward.

H. Denzinger(10) described a case of adenocarcinoma of the kidney in a man sixty years of age. For two years had suffered with anorexia, nausea, and occasional chills followed by general severe disturbances, localized pain in the left lumbar region and the lateral portion of the bladder. Had bloody urine off and on for years, but lately passed quite a quantity of bood, at one time about 3 liters. A tumor of the left kidney was palpated; an attack of erysipelas complicated his condition. Death followed from a general breakdown. On autopsy the left kidney was found enormously enlarged, one and one-half times as large as a child's head, by a tumor consisting of fatty, solid, and partly necrotic tissue, with hemorrhagic infarcts distributed throughout the mass. Both poles showed well-preserved kidney substance. At one pole there were a number of calculi and one large incarcerated stone. The tumor consisted of single nodular masses separated from each other by connective tissue. The nodules were of grayish-red color, others dirty yellow, some flesh, others necrotic and hemorrhagic. Microscopical examination showed the growth to be an adenocarcinoma.

Krönlein(11) reports a case of nephrectomy for adenocarcinoma which patient was perfectly well eighteen years and seven months after the operation. The case was that of a female, fifty-

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eight years, single, diagnosticated as adenocarcinoma of the right kidney. Paraperitoneal nephrectomy was performed April 11, 1885; discharged cured May 9, 1885. The tumor had given rise to symptoms for about one year, pointing to kidney trouble. On account of the size of the tumor, about four times the normal dimensions of the organ, the operator for the first time chose the so-called paraperitoneal flank incision, as described by himself, d'Antona, and Trelat. The capsule of the kidney was nowhere broken through by the soft, hemorrhagic cancerous mass, but otherwise the entire kidney substance was involved with the exception of a small portion at the lower pole; the ureter up to about 1 cm. from the cut surface was completely filled with tumor masses, but the vessels of the hilus were free. The diagnosis of adenocarcinoma was confirmed by the microscope. The patient is now seventy-six years old, is in good health, has had nothing to indicate recurrence and has had no hernia from the cicatrix, although the abdominal wall is very flabby. She had always worn a broad, well-fitting binder since the operation.

This case seems to be the only one reported in the literature in which the patient was free from recurrence for such a long time after nephrectomy for malignant disease, the next in point of time being a case reported by Israel which patient was well fourteen years after.

C. Weigert(12) reports a unique case of congenital adenocarcinoma of the kidney occurring in a still-born full-term child. Although poorly developed the internal organs were fairly normal, but testicles had not descended and it had harelip and cleft palate. The left kidney was the seat of numerous nodules, from the size of a pea to a hazelnut, but the parenchyma was of normal, structure. The nodules proved to be typical adenocarcinoma. The right kidney was much smaller and also contained one small nodule, size of a cherry, otherwise normal. He also mentions a case which occurred at the age of one month (Bednar, *Canstatt's Jahresber*, 1873, i, 218).

T. Baumgarten(13) reports a case of congenital adenocarcinoma of the kidney occurring in the case of a girl, seven years, from whom they removed a tumor which upon histological examination they pronounced to be an embryonal adenocarcinoma. The child remained in good health until 1901, seven and one-half years later, when she was again admitted to hospital with a tumor occupying the entire left side of abdomen with general

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breakdown of constitution and every evidence of recurrence of the primary disease. Laparotomy was performed Feb. 23, 1901, and showed a tumor situated in the lateral posterior abdomen, enclosed in a capsule with numerous firm adhesions to the intestines, making extirpation difficult and necessitating resection of a large portion of the transverse colon. Beneath the tumor proper, in the anterior abdominal cavity there was another highly vascular nodule, completely separated from the former, which was also removed. Inspection and palpation of the liver during the operation showed the presence of many metastatic nodules in the liver, especially prominent on the convex surface. The spleen was enlarged and hard, the right kidney as well as the internal genital organs were not changed. The extirpated tumor, mostly solid-soft, partly cystic, weighed 3500 gm., its length was 64 cm., its breadth 51 cm. The patient recovered from the operation and lived until the following September, when she died at her home, very likely from metastasis. Histological examination of the mass proved it to be the same structure as the original—adenocarcinoma.

Some of these tumors attain to very large size, as in the last recorded. The largest reported weighed 35 pounds (*Twentieth Century Practice*, vol. xvii, p. 549). Most authorities state that the right kidney is affected more frequently than the left, although some claim the reverse is true.

H. Brooks(14) reports the case of a woman, forty-eight years, who died of an injury. He discovered at autopsy a tumor consisting of a globular mass, smooth, subcapsular and of less tension than the remaining portion of the kidney tissue. It proved to be an adenocarcinoma, which he considered as originally an adenoma with subsequent malignant change. He collected 127 cases up to 1896, but among them were some congenital tumors and others in which the description is more characteristic of the more common growth, hypernephroma.

Shrady reported a case in 1881. Fenger(15) reports a case of primary carcinoma of the left kidney. He states that the average duration of the disease in adults is one to two years. One of Wagner's cases lasted seven and one-half years. Brewer(16) reports a primary tubular carcinoma of the left kidney. Exploratory puncture resulted in so much hemorrhage that immediate interference was necessary.

Relative Frequency.—The frequency with which different tumors of the kidney are met cannot be determined with accuracy,

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owing to the confusion of terms employed by different writers upon this subject. A. B. Johnson(17) mentions twenty cases of renal tumor occurring in the Roosevelt Hospital from 1890 to 1900 and the New York Hospital from 1900 to 1908 in children and adults, as follows:

In children:

Round-celled sarcoma	1
Mixed tumor—embryonal adenomyochondrosarcoma	2
Mixed tumor, probably involving both halves of a horseshoe kidney	1
Mixed-celled sarcoma	1

In fourteen adults there were:

Carcinoma	4
Cystic sarcoma	1
Adenosarcoma	3
Sarcoma	3
Hypernephroma	3
Unknown character	1

Morris(18) gives the relative frequency of 154 renal growths as follows:

Sarcomata	63
Carcinomata	41
Cystic degeneration	21
Hydatid cysts	11
Adenomata	10
Papillomata	3
Myxomata	2
Lipomata	2
Dermoid cyst	1
	154

Primary malignant disease of the kidney is usually unilateral. The left side shows a slight preponderance, while both kidneys are affected in a very small percentage of cases, although Morris states that the right kidney is affected very much more frequently than the left and gives figures from English and American authors in support of the view.

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Kelynack gives:

44.07 per cent. affecting the right kidney.
45.76 per cent. affecting the left kidney.
10.18 per cent. affecting both kidneys.

Extension of Growth.—1. The spread of malignant disease of the kidney may occur by direct invasion into the venous channels.

2. By extension into contiguous tissue.

3. Through the lymphatic vessels, the lumbar, mesenteric, and vertebral glands being first invaded.

4. Invasion of the bladder may occur through the urinary stream.

Kelynack says that spread by lymphatic invasion does not generally occur early, and as far as he can gather is comparatively rare. Metastatic deposits occur in the lumbar, mesenteric, and vertebral glands, liver, bones, suprarenal capsules, omentum, heart, and the like.

Duration.—The duration ranges from six months to six years.

Age.—The age at which carcinoma of the kidney most frequently appears is between forty and sixty, although some cases are seen under thirty, and we have just mentioned two cases of congenital adenocarcinoma, one occurring in fetal life and the other in a young infant.

Sex.—Reported cases seem to show that males suffer almost twice as often as females from malignant tumor of the kidney. According to J. Israel,(19) of sixty-eight cases forty-five were males and twenty-three females.

Heredity.—All authorities seem to be agreed upon the statement that heredity is of little importance in the development of these growths.

Causation.—We have no positive knowledge of the causative factors in the production of renal growths. It is quite probable that a large proportion are of congenital origin and in part at least due to cell rests, as congenital cystic kidney, congenital sarcoma, hypernephroma, and similar conditions. In some cases it would seem likely that the aberrant cells remain quiescent to be excited into activity in life by trauma or irritation.

Chomel, Bright, Manzolini, W. Brinton, Jerzykowsky(20) each report a case of injury subsequently followed by carcinoma of the kidney. However, the kidney is so well protected that traumatism and irritation, which have been considered by some as important in the production of newgrowths in other localities,

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would be thought unimportant factors in the production of renal neoplasms. The number of cases in which the first symptoms noted appear after an injury make us pause and question whether traumatism is the cause of tumor formation. It is possible that the injury simply calls attention to a preexisting growth or, again, it may excite into activity and mitosis cells already possessing abnormal power of reproduction or it may be simply a coincidence.

Is Calculus a Causative Factor?—As a result of chronic irritation in other parts of the body carcinomatous growths have been known to develop (*Morris*, vol. i, p. 548). Gallstones have been considered by many to be a causative factor in carcinoma of the gall-bladder. Wilks, Frerichs, and other well-known pathologists have regarded calculus as a causal agent in some cases of carcinoma of the kidney. Cases have been reported by Bright, (21) Eves, Brodeur, Walsham, MacCormac, Morris, Battle, Knowsley Thornton, and Drew. According to Drew, specimens of papillomata associated with calculus formation are to be found in the Museums of University College and Guys Hospital. Butlin says, "The frequency with which renal calculus has been found in cases of renal cancer has led to the belief that cancer is induced by the presence of calculus."

A number of other cases where calculi and growth were associated have been recorded by Coupland, Cullingworth, Davy, Dickinson, Gluge, Hartmann, Israel, Jessop, Lucas, Moore, Papavoine, Pollard, Rokitansky and Schuppel. The exact character of the carcinoma in these cases is not given and I have been able to find only one case of adenocarcinoma coupled with calculus. I think from the evidence at hand we are justified in the conclusion that the presence of calculus may favor the development of the growth, but that it is a direct cause is certainly not proven.

Diagnosis.—The diagnosis of renal tumors is by no means easy at the time at which surgical intervention offers some hope to the patient of a permanent cure. The symptoms which will attract the patient's attention to his condition are hematuria of an intermittent type occurring in some instances after an injury, but recurring without apparent cause. The blood is usually mixed well with the urine, but in some instances clots are noted. The quantity of blood varies markedly, is more persistent in carcinoma than sarcoma, and also in adults more than in children.

According to Imbert(22) hematuria as a sign of renal neoplasm

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is more frequent in the adult and very exceptional in the child. He states that Guyon has found it as an early symptom 137 times in 257 observations, or 54 per cent., but it must not be regarded as a sign of beginning disease of the kidney for, on the contrary, it is usually a late symptom according to the latter author's experience. He collected 357 cases in which the diagnosis had already been established. Of these 235, or 68 per cent., had bloody urine, and says it is most often seen in epithelioma and hypernephroma 75 per cent., while in adenoma and sarcoma it was present 45 per cent.

Enlargement of the kidney is the next sign of importance. Perceptible increase in the size of this gland was present in 255 cases out of 303, or 84 per cent. By placing the patient on the unaffected side Israel has been able to demonstrate small neoplasms the size of a hazelnut to that of a plum.

Pain.—Often pain is not an important symptom and in some cases it appears as a dull, heavy, dragging sensation in the loin and side. In my own cases the pain was never very severe—According to Johnson, "In the cases which do not bleed, pain consisted more in a feeling of heaviness than actual suffering. and discomfort in the back or loin are not constant or even very frequent symptoms." They occur in only 15 per cent. of Isreal's cases, and he considers that the absence of pain can in no wise be regarded as a condition rendering the presence of tumor improbable. Chevalier, on the other hand, states that pain is an initial symptom among adults in 28 per cent. and among childern in 7 per cent. of all cases. As the size of the tumor increases the disturbance of the general health, anemia, and cachexia appear as time passes and metastasis may be recognized later in the disease.

Changes in the character of the urine are sometimes entirely wanting and at others very striking. A large proportion of the cases will show hematuria and albumin will ordinarily be found as the result of the presence of blood unless there be some complication. Casts, crystalline elements, and pus are usually wanting, their presence indicating a complication. Pus may be found whenever there is an infection of any part of the urinary system.

Mention has been made by Guyon of the importance of varicocele as a symptom of renal tumor. He claims that the varicocele increases proportionately to the size of the tumor mass and the pressure upon the spermatic vessels. This symptom is

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more likely to be met on the left side. In a number of cases it has not occurred and is unimportant as regards the early diagnosis of the condition. In the early stages the enlargement will show considerable mobility and in most instances moves with the diaphragm in respiration, although some observers have denied this. As the growth advances beyond the limits of the kidney pressure symptoms will be noted and ascites will develop. Rarely will icterus be present, and when it occurs it is an indication of the involvement of the tissues near the hilum of the liver. Elevation of temperature rarely occurs except in the later stages, when there is considerable tissue destruction. Cachexia and anemia occur as late symptoms.

The diagnosis of renal from nonrenal growths is to be made by excluding affections of the other abdominal organs, as ovarian and uterine tumors, tumors of the intestine, gall-bladder, stomach and pancreas. With careful attention to the history of the case, urinary findings, and the abdominal examination one should usually be able to make this differentiation. The differentiation between renal tumors and other enlargements of the kidney is in many cases no simple matter, and sometimes it is impossible. Hydronephrosis will oftentimes give the history of bloody urine and a steadily increasing enlargement in the side. Usually the history will show evidence of the passage of crystals in the urine which cause a suspicion of calculus and obstructed ureter. It may also result from the presence of a carcinoma of the uterus and adnexa with pressure upon the ureter. The same is true of prostatic enlargement. Again a marked mobility in the kidney may result in an intermittent hydronephrosis which, however, will show a variation in size from time to time, and the diagnosis under these circumstances should be somewhat easy. While an exploratory puncture might afford conclusive evidence it should not be used where there is any suspicion of renal new growth, because of the danger of the implantation of malignant tissue outside the diseased structure and also because of the danger of hemorrhage as noted in Brewer's case mentioned above.

Pyonephrosis will give evidence of pus in the urine unless the ureter be plugged, and the patient will give a history of elevated temperature, sweats, and other collateral symptoms. Tuberculosis of the kidney in the majority of cases can be diagnosticated by catheterization of the ureter and micro-

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scopic tests for tubercle bacilli; this may be supplemented by inoculation of lower animals and also the tuberculin reaction. Stone in the kidney presents so many symptoms in common with tumor that diagnosis between the two conditions becomes important. Crystalline elements, pus, and blood in the urine, the latter increased by motion and exertion, point strongly toward stone. Careful employment of the Roentgen ray ought to reveal the presence of stone. The shadow of a calculus will be sharply defined and somewhat dense, whereas that of tumor is rather dim in outline and gradually fades into the surrounding tissue. This is true in our case, where we only suspected a neoplasm because of the shadowy picture. Dr. Bruce, who made the skiagram of this case, leaned strongly to the diagnosis of renal new growth, having seen a similar case previously.

Differentiation of the special variety of tumor present in a given case is exceedingly difficult before operation. In determining the character of growths affecting the kidney we must take into consideration the age of the patient, whether one or both organs are affected, the rapidity of growth, and the amount of hemorrhage. Some writers claim that carcinomatous growths give rise to hemorrhage in the larger proportion of cases than do the benign growths or sarcoma. A few adenocarcinomata occur in young infants and children, but by far the larger number of tumors then occurring will prove to be sarcomata; the latter tumors also grow much more rapidly than do the carcinomata.

A tumor appearing in infancy or childhood, growing very rapidly, causing some hemorrhage, and not a great amount of pain except from pressure, would point strongly toward sarcoma. A similar growth in the adult with considerable hemorrhage, a tendency to metastasis, and a dragging weight or pain in the loin would most likely be a hypernephroma or a carcinoma. A growth of somewhat slower development, with perhaps hematuria as a symptom, or at least but little pain, would lead one either to the conclusion that he was dealing with a benign adenoma or an adenocarcinoma. Polycystic disease is usually bilateral. The same is true of secondary carcinomatous deposits.

Prognosis.—The prognosis of renal carcinoma is always grave, although radical removal in its early stages will offer about as large a percentage of recoveries as carcinoma in any other part

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of the body. Prognosis becomes more grave with the increasing size of the tumor and with its fixation, the latter being an indication that there is a tendency for the new growth to break through the capsule of the kidney and attack surrounding structures. Metastasis is also an evidence of gravity, and if present is a contraindication to operation.

Primary mortality from nephrectomy for malignant growths has been reduced in the past twenty years from 60+ per cent. to 23 per cent. Garceau(23) collected 176 cases of hypernephroma in 143 of which nephrectomies were done, with thirty-three operative deaths, or 23 per cent. With earlier diagnosis and improved methods of technic we believe that the mortality should not be over 5 per cent. A very important consideration in this connection is the percentage of permanent cures which may be obtained after nephrectomy. The number of cases of adenocarcinoma is so small we are unable to reach any definite conclusion on this point in this class of tumors, but in Garceau's report of 176 cases of hypernephroma we find the following table:

Immediate operative deaths	33
Died later after operation	43
Survivals	31
Result not stated	36
Total	143

One of these cases, reported by Albrecht,(24) is unique in that four years after nephrectomy a bone metastasis occurred in the scapula, which was removed and the patient was still alive two years and seven months after the second operation. But taking the results from Garceau's report we have the following table showing survival after operation:

Survival.	*Number of cases.*
1 year or under	9
1 to 2 years	6
2 to 3 years	7
3 to 4 years	2
4 to 5 years	3
5 to 6 years	2
6 to 7 years	1
9 to 10 years	1
Total	31

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Israel,(25) in 1901, reports reduction of mortality to 18.6 per cent. in his cases. Bloch(26) gives the following details of malignant tumor of the kidney, 126 in number, occurring in the clinic of Israel since 1901: "Nephrectomy was done 124 times, exploratory abdominal incision only twice. Of the 124 nephrectomies twenty-eight patients died shortly after operation, three by metastases of the original affection and cachexia during the course of the disease, accidents which have nothing to do with the operation. Therefore the operative mortality is 22.2 per cent.

"Counting three years as the minimum term of a permanent cure, twenty-six out of eighty-three patients have remained permanently cured, while three died accidently after that time; 32.6 per cent. of all who lived after the operation and 27.7 per cent. of all patients operated upon have remained permanently cured. Counting five years as the minimum term of permanent cure, nineteen patients out of the eighty-one operated upon remained permanently cured, while in five patients the further course of the disease could not be ascertained. Thirty-five and nine-tenths per cent. of fifty-three who lived after operation, 25 per cent. of all operated upon remained permanently cured.

"The permanent results after removal of kidney tumors are better than after extripation of stomach and rectal cancers, and just as good as after the removal of mammary carcinoma."

The mortality of the operation is to-day 22.2 per cent. of all cases; in Israel's statistics of 1901 it was 18.6 per cent. This seems to mean worse results in spite of the improved technic, but it can be explained by the fact that during the last few years there were many of those advanced cases of kidney tumors which have still been operated upon on account of the improved technic, while they would have been excluded from operation in former years.

Treatment.—The only hope of recovery offered to a patient suffering from a malignant disease of the kidney lies in an early and complete nephrectomy. Partial nephrectomy has been practised at least five times for malignant tumors according to Morris,(27) but in every case the surgeon thought he was dealing with a benign tumor. The results were not encouraging. In cases which have progressed to an extent which forbids operative interference, palliation, in order to make the patient comfortable, is all that can be offered, inasmuch as treatment by toxins or sera has not been very satisfactory.

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Contraindications to operation would be a markedly depressed state of general health, the evidence of disease of the other kidney, fixation of the growth, extreme enlargement and metastases. In the performance of nephrectomy the lumbar incision is the method of choice, except in those cases where the growth has reached a large size, when the abdominal incision is preferable.

FIG. 1.

Report of Personal Case.—M., æt. twenty-eight, was first seen September 23, 1909, with Dr. Bronner. This patient had a history of having had gonorrhea four years before and two years previously received an injury on a train. One year ago he had an attack of general abdominal pain with some radiation of pain along the urinary tract. About four months before I saw him he suffered from a fall, following which he had some considerable pain in the left side, and for five days there was quite an amount of blood in the urine. Later this symptom subsided and reappeared again about two weeks ago following a sudden exertion. His urine showed pus cells, some blood cells, staphylococci and a few diplococci, but no tubercle bacilli.

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Careful examination revealed enlargement of the right seminal vesicle and also the left kidney was palpable and apparently slightly enlarged as well as mobile.

Diagnosis.—Traumatism, causing hemorrhage. The patient returned on March 16, 1910, with a history of another attack of hematuria in December 1909. Following this he was in fair health until March 1, when he developed an acute gonorrhea. Recently after lifting a log he began again to suffer from hematuria. He now has acute cystitis. His left kidney is large and tender and readily palpable, and gives an impression of increase in size since the last examination. The patient re-

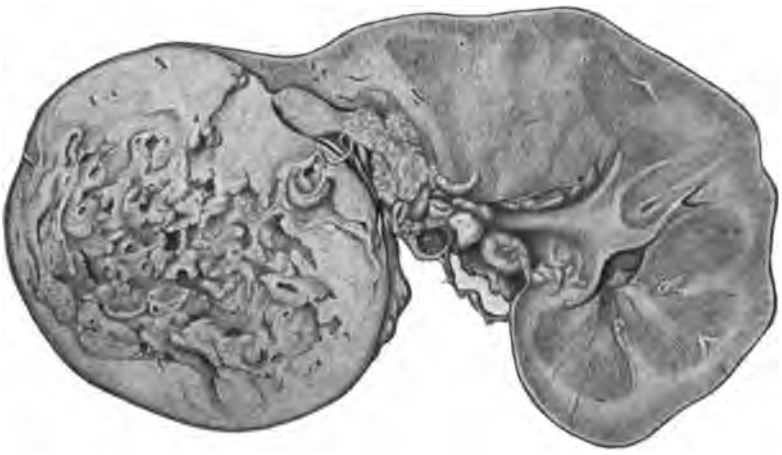

FIG. 2.

mained in the hospital until May 2, when there remained no evidence of the acute infection mentioned above. At this time an effort was made to examine the bladder and catheterize the ureter, but owing to the amount of irritation produced by the instrument upon the recently inflamed urethra we were unable to do this successfully. The skiagraph made by Dr. Edward T. Bruce showed a faint shadow in the left kidney region, not sufficient, Dr. Bruce thought, to resemble stone, but did resemble another case in which tumor was found.

Repeated examinations were made for tubercle bacilli and all were negative. The urine at no time showed any crystalline elements. The diagnosis was not positively made, but we felt sure from the size of the kidney and the amount of hemorrhage, as well as the deterioration of the patient's health, that operative interference was necessary. The latter was deferred for some

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days, owing to a bronchitis with which the patient was attacked early in May.

Operation.—On May 7, 1910, assisted by Dr. Bronner, through an oblique left lumbar incision nephrectomy was performed, resulting in recovery. Upon incision through the kidney and growth, after its removal, the organ was found to be 6 inches

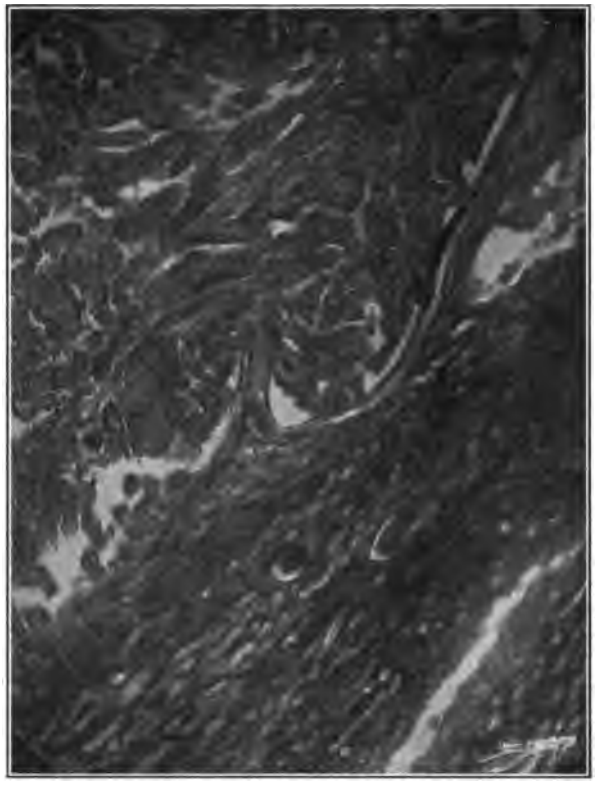

FIG. 3.

in length by 2 1/2 x 2 inches; at the lower pole an irregularly rounded nodular mass was observed. A number of branching vessels were seen on the surface of the tumor. On palpation it was not so resistent as the other portion of the kidney, and a few whitish spots were seen. On section the kidney appeared slightly congested, with a tumor 3 inches in diameter at the lower pole, apparently encapsulated with infiltration into the parenchyma and also into the fat about the pelvis. Inside the capsule

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was a grayish-white mass of material a little firmer than thick cheese. The remaining portion of the kidney showed some congestion, but the tissue appeared to be almost normal except where the growth was infiltrated through what might be termed the capsule.

The following report of the pathological examination was made by Dr. John E. Hays, to whom I wish to extend thanks

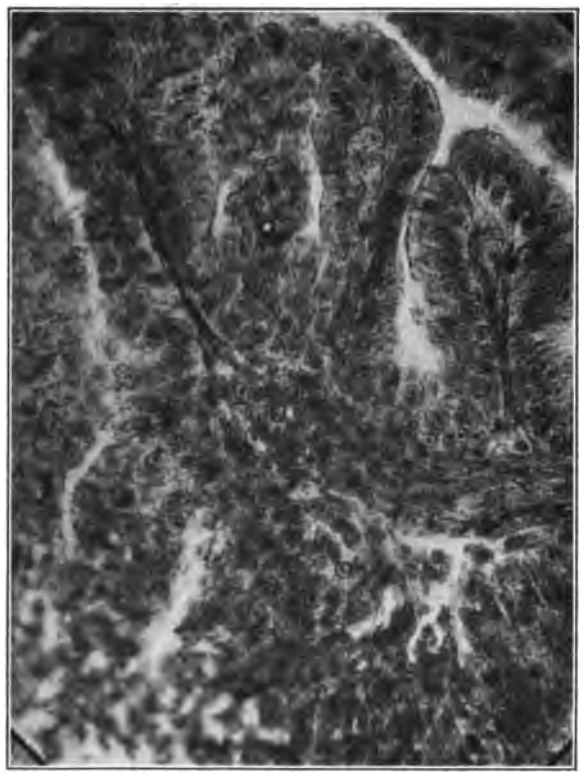

FIG. 4.

for his assistance. Macroscopically the specimen presents two well-defined areas. At the lower pole is seen what appears to be a large cavity filled with caseous matter, while above this is the kidney proper. The capsule of the kidney extends over and encloses the caseous mass, also seems to branch at the junction of this mass and the kidney, runs around the inner surface of the mass so as to give the appearance of complete encapsulation (see Fig. 2).

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Blocks of tissue were taken from the junction of this mass and the kidney and from one of the nodules on the surface of the kidney. These were fixed in 4 per cent. formalin, hardened in alcohol, embedded in celloidin, sectioned and stained in hematoxylin and eosin.

On microscopical examination the kidney tissue is found to be undergoing parenchymatous and fatty degeneration, with small areas of hemorrhage and pigmentation. As the caseous mass is approached the renal tubules and Malpighian bodies are atrophied and compressed; in fact the elements are condensed to such an extent as to give the appearance of a capsule separating this caseous mass from the kidney proper (see Fig. 3). There is some increase of connective tissue here, but it does not

FIG. 5.

form a distinct continuous capsule. Between this pseudocapsule and the caseous mass we come to some of the tumor tissue. This is formed of one or more layers of glandular epithelium arranged in atypical tubules. When cut transversely these tubules seemed to be lined with one or more layers of glandular epithelium. The cells are very irregular in size and shape, the protoplasm full of chromatin granules with nuclei which take the stain in varying amount, some staining deeply, others very lightly. These tubules cut longitudinally and obliquely present a very complicated picture.

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Hardly a tube is found that shows an even lumen bordered by a single layer of epithelium. Instead, the lumen is narrow at one place and wider at another, and at other places we do not see any lumen at all—only a mass of epithelial cells. Where the tubules widen out into quite large spaces there are found papilliform projections into the lumen formed of a narrow band of connective tissue covered with one or more layers of epithelial cells (see Fig. 4). Beyond this zone we come to the caseous mass

FIG 6.

before mentioned. There is no structure of any kind found in this, only a mass of broken-down necrosed tissue. Whether it was once composed of tissue like that just described or normal renal tissue is a matter of conjecture. However, we do find some of this atypical glandular tissue in the outer covering of the mass (see Fig. 5). This may indicate that this necrosed mass might have been of the same structure at one time. Sections from the

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nodule on the body of the kidney show the same structure as detailed above, except that there are no areas of necrosis, and other fields are found presenting an entirely different picture. We here find the bloodvessels surrounded by many layers of cells (see Figs. 6 and 7). These cells have a clearer protoplasm of fewer granules than the epithelial cells of the rest of the growth; their nuclei are larger and contain distinct nucleoli. I take it that these cells are of connective-tissue type and originate from the adventitious coat of the bloodvessels. We have here a

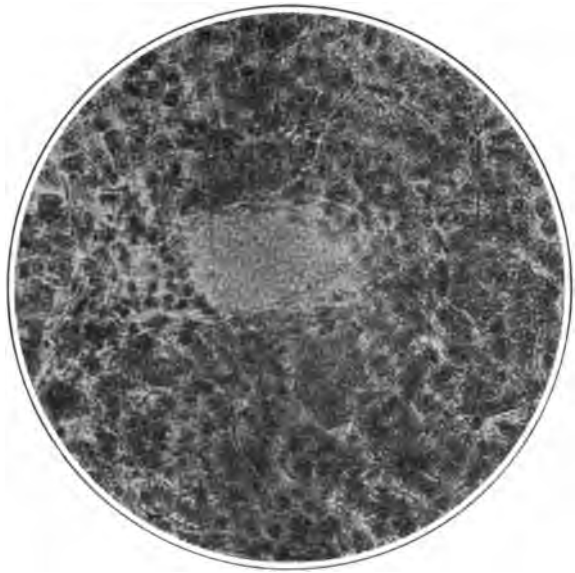

FIG. 7.

typical picture of what Zeigler(28) calls a perithelioma, a variety of hemangiosarcoma in which there is a proliferation of the outer layers of the wall of the bloodvessels and their immediate surroundings, so that the vessel lumina are surrounded by more or less thick mantle of cells.

The location of the morbid growth, upon the surface and under the capsule, for the most part would lead one to think that we had to do with an hypernephroma. The microscopical findings do not bear out this view. The character of the cells in an hypernephroma is entirely different from those found in this growth. In the first, the cells are like those in the cortical portion of the adrenal gland—large cells with clear protoplasm and

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small nucleus arranged in columns on each side of a capillary network.

The preponderance of atypical tubular gland tissue, a rapid proliferation of cell elements with small development of connective tissue, and a tendency of these epithelial cells to invade the renal tissue constrain me to make the diagnosis of adenocarcinoma. The presence of the abnormal growth of cells around the bloodvessels, as noted above, does not negative this opinion. Zeigler expressly states that this condition may accompany other morbid growths in the kidneys, ovaries, and testes.

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DISCUSSION.

DR. JOHN F. ERDMANN, New York City.—Mr President: From a statistical standpoint, I would like to report five cases of tumor of the kidney on which I have operated, four being hypernephromata, and one recent case, a large sarcoma, its nature not diagnosticated until after operation, situated on the left side. The last patient was forty-nine years of age. The tumor filled three-fourths of the abdomen, involving the left lumbar region. I inserted a trocar and drew off eleven pints of fluid. We could not remove the tumor on account of the immense area of invasion intraperitoneally. I could stick my hand and one-half of my forearm into the kidney itself. I have had in addition two other cases in males of left-sided hypernephromata, one in particular in which I removed a considerable amount of peritoneum, as a result of adhesions, involving the pole to the descending colon, with a recovery now of two years and two months. One patient, a female, had a hypernephroma of the right side. In that case the patient lived six months, the tumor subsequently involving the vena cava and the femorals. Out of five cases, one was a female, with the tumor situated on the right side, and the others males, with the tumors situated on the left side. All recovered, with the exception of the one case mentioned. There were four removals. In one aspiration was resorted to, and, as I have said, eleven pints of fluid were withdrawn. One patient lived six years before secondary invasion occurred. In one case, where I excised a considerable portion of the peritoneum covering the lower pole, the growth had extended into the renal vein to within half an inch of the vena cava. The man had lost considerable flesh, so that I was able to turn him over and make a transverse incision so as to push the peritoneum and intestines

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to the right side, giving free access to the junction of the renal vein and vena cava. In removing the renal vein a plug about the size of one-half my thumb was adherent to a portion of the vein itself as it makes its exit from the kidney. He is now having secondary invasion.

As to the question of hematuria, there is one variety of case which Dr. Sherrill did not mention. I have had one case of supposed sarcoma of the kidney which upon removal of the right kidney proved to be a granulomatous condition, and not a sarcoma. There was no malignancy whatever. The man had been having persistent hematuria for a number of years, and with intermittency, and finally with catheterization, we found pure blood coming from the right side.

DR. LEWIS S. MCMURTRY, Louisville.—The paper that has been presented by Dr. Sherrill is one that is difficult to discuss because of the nature of the condition described and the comparative scantiness of classified knowledge on the subject. I think that we owe Dr. Sherrill an expression of appreciation for the work he has done on this paper, which covers a large area which has not hitherto been classified in the manner in which he has done it.

There is only one feature I wish to allude to and that is the pathology. I think in these cases it is very doubtful if the analogy between the relation of stones in the gallbladder and the development of malignant disease, or the relation of stones in the kidney and the development of malignant disease, can be established here. There seems to be in the kidney, with the presence and irritation of stone, on account of the different character of tissue and different function of the organ, a greater disposition to suppuration than to malignant disease; whereas in the gallbladder we can regard it now as thoroughly established that the irritation of gallstones is often a positive factor in the development of malignant changes.

DR. SHERRILL (closing the discussion).—I have nothing of special interest to say in reply except to thank the gentlemen for their discussion.

Dr. McMurtry probably recalls a case which I saw with him where a kidney the seat of stones was removed, but in which a diagnosis had been made by another surgeon of sarcoma. Dr. McMurtry, not concurring in this diagnosis, removed the enlarged kidney, and found it to be lipomatous, the kidney full of fat, not degenerative fat, but new fatty tissue which was displacing the kidney structure, and in this structure we found a number of stones, so that while, as I said in my paper, it is not proven that calculus has no effect in the production of malignant disease or malignant tumor, it is shown according to this case mentioned just now, that new growth does result from the irritation produced by calculi. In this instance it was a benign growth, and I can see how in other instances it is possible for irritation of a

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calculus to cause mitosis of the fibrous tissue cells and produce in that way sarcoma. As I said in my paper, this causative relation is not established, but there seems to be produced as the result of stone, some effects, and many authors claim that trauma is a factor in the production of these new growths of the kidney.

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THE BREAST OF THE EXPECTANT MOTHER: ITS CARE BEFORE AND DURING THE PERIOD OF LACTATION.

BY
FRANCIS REDER, M. D.,
St. Louis, Mo.

(With thirteen illustrations.)

THE questions paramount with me are these: is it possible through judicious management of the breast of an expectant mother to so condition the nipple that nursing may become to the mother the pleasant task that is intended? and, furthermore, is it possible to eliminate from the puerperium the so-called milk-fever? From those cases in which the physical culture has been faithfully carried out these questions can unhesitatingly be answered in the affirmative.

The greatest interest in the anatomical construction of the female breast centers itself upon the nipples and the ducts. Of the fifteen to twenty compound racemose glands, each gland has its individual lactiferous tube, which is formed by the union of four, six, or eight minute ducts. These tubes converge toward the nipple and become collected in a fasciculus beneath it. A firm cellular tissue supports them in this situation. As the lactiferous tube inclines toward the areola it dilates somewhat, forming the sinus lactei. At the base of the nipple, however, it narrows again and runs in a straight course to the summit of the nipple, where it terminates in a small opening. The nipple represents a conical, blunt-pointed, skin elongation with numerous papillæ studding its surface. These papillæ have a foliated appearance and are grouped in circular form about its base.

The substance of the nipple is rich in muscle fibers, vessels, and nerves, imparting to it a marked degree of erectile power. Dotted about the summit of the nipple are the minute openings of the lactiferous tubes. Every obstetrician has met with some of the anatomical anomalies of the nipple. These abnormal

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formations may be due to a primary deficiency in its development. It may also be the result of faulty dress, causing the nipple to become forcibly imbedded in the glandular substance. Furthermore, an inflammatory condition, with deep-seated pus formation, may cause a retraction, or an unusually large breast may so engulf the nipple as to make it almost invisible. Every nipple that is not of sufficient size and proper shape to make it fit for nursing is a menace to the mother. Such a nipple

FIG. 1.—Lactiferous tubes or ducts, injected, showing their radiated direction and in some places their interramification.

predisposes to excoriations and fissures, not merely because of the inability of the child to properly nurse and evacuate the breast, but also on account of the milk and the secretions collecting in the corrugations and there undergoing decomposition because of the difficulty of thoroughly cleaning such a nipple.

It is the duty of the physician to see that the nipple is properly prepared for its future function. Unfortunately, this chapter of the pregnant state is too often entirely overlooked or only casually alluded to. The attention to a normal nipple should begin about eight weeks before the expected time of confine-

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ment. Nipples showing marked deviations from the normal require three to six months of a systematic massage to develop them to a state of usefulness.

In preparing a nipple it is the object to develop such form and size as to make suckling easy for the child and painless to the mother. It is not the desire to create a big and hard nipple, but rather a nipple that is soft and elastic. The advantage the latter has over the former is that if it should become excoriated or fissured at a time during its function—and a nipple ever so efficiently cared for cannot be regarded as proof against a lesion—the excoriation or fissure will heal more rapidly and with less pain than in the nipple which is large and hard. It is

FIG. 2.—Nipple showing papillæ, their foliation and arrangement.

FIG. 3.—The nipple and the straight ducts.

seldom that nursing must be discontinued during the healing of a soft, elastic nipple, while with the other kind the pain caused by the suckling of the child is such that the mother often will not permit the breast to be nursed.

To properly prepare a nipple the expectant mother is instructed to use soap and water freely. After drying the breast, gentle friction with a rough towel or flesh brush is made for about five minutes. Following this rubbing, the nipple is massaged by rolling and kneading it between the fingers, gentle traction being made during these manipulations. The free use of olive oil during the process of massage, which is to be done twice daily, is advised. It is surprising how an almost hopeless appearing nipple will in a comparatively short time assume the characteristics of a normal one. The application of alcohol and astringent lotions is to be condemned. A nipple cared for with these agents will become large, hard, and inelastic,

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presenting deep corrugations, which will impede the healing of any excoriation or fissure should such a lesion occur. The pain accompanying such a lesion brings many hours of suffering to the mother.

A nipple prepared by the method of systematic massage will usually withstand the strain of the nursing period without mishap. Its care after the child has commenced to suckle renders itself into one of simple cleanliness. Thorough ablutions after each nursing to free it from any accumulated secretions and the liberal dusting with boracic acid, which is washed off when the child is put to the breast, is all that is necessary.

FIG. 4.—Massage of breasts. Position of hands. Side view

This regime, however, must be diligently adherred to. The care of the breast is as important as that of the nipple. Its anatomical structure gives evidence of how readily this organ is amenable to culture if only instituted properly and at the right time. The breast of a healthy girl that does not show development conforming to the incentive given by puberty should, after an elapse of three years, be subjected to the stimulating influences of a systematic massage. This massage is to be continued until a normal equipoise has been attained. By developing the breast at this stage of womanhood many of the obstacles pertaining to a normal motherhood may be overcome.

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The massage in reality is an exercise most simple in character. By placing a breast in the palm of each hand and locking the fingers across the chest, the young woman is asked to walk about in a well-aired room, and with a full inspiration force the hands apart. This exercise is to be repeated for at least fifteen minutes daily. It is most conveniently carried out upon rising and before retiring, and should be continued until satisfactory results evidence themselves. The normal breast of the expectant mother should receive some attention as soon as the physiological changes manifest themselves. In the primipara these changes occur

FIG. 5.—Massage of breasts. Position of hands with interlocking fingers. Front view.

very early, usually the second or third month, whereas in the multipara no changes may manifest themselves until a few weeks before the labor.

The breast during the pregnant state does not require the judicious management that the breast demands after lactation has established itself; however, it is of the greatest import, especially if the breast gives evidence of great fulness and tension with tenderness that the lactiferous ducts be maintained in as patulous and healthful a state as is possible; in short, the secretions in the tubes should not be allowed to become stagnant. It has been demonstrated that the staphylococcus albus and also the staphylococcus aureus find entrance into the milk ducts from the skin. In a woman, robust and in good health, whose labor has not been fatiguing, these microorganisms may produce

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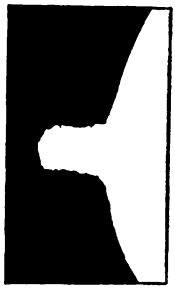

FIG. 6.—Normal nipple.

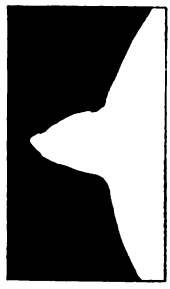

FIG. 7.—Cone shaped nipple. Undesirable for nursing.

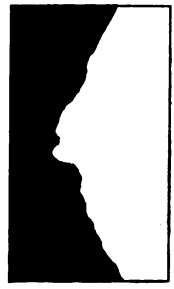

FIG. 8.—Stunted nipple. Caused by deficient development.

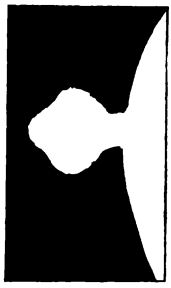

FIG. 9.—Mushroom nipple. A menace to the mother.

FIG. 10.—Fissure of nipple.

FIG. 11.—Mulberry nipple. A menace to the mother.

FIG. 12.—Retroverted nipple. Usually the result of inflammatory process in breast.

FIG. 13.—The engulfed nipple. Caused by the overhanging of an unusually large breast. A very troublesome nipple. Nursing usually impossible

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no ill effect. On the other hand, in a woman who is delicate and whose labor has been severe these organisms may, at the time of the primary lacteal engorgement, produce alarming and distressing constitutional symptoms. These symptoms manifest themselves in a severe chill or a succession of chills, followed by a high fever, forty-eight to seventy-two hours after the birth of the child. This condition frequently is misinterpreted as to its character and has often been a cause for alarm.

That this so-called milk-fever is the result of these micro-organisms having gained entrance into the lactiferous ducts, and having been stimulated into great activity by finding a proper medium in the milk for their propagation has been to me the only explanation. I assume its explanation upon the ground that as soon as the engorgement is relieved either by the suckling of the child or by the mechanical discharge of the milk with its bacteria-laden mass the "milk-fever" disappears. If the evacuation of the breast is attended properly and at regular intervals, no reappearance of the symptoms will occur.

It is maintained by some that milk-fever is an accompaniment of every normal puerperium. One could hardly be convinced that a chill followed by a high fever was necessary to usher in the period of lactation, and could be looked upon as a natural physiological process. The phenomena is rather characteristic of an inflammatory attack, and I am convinced that it can be attributed to a violent bacterial invasion. Massaging these organs daily from base to nipple with a liberal amount of sweet oil four mouths before labor is anticipated will in most instances entirely eliminate the so-called milk-fever from the puerperium.

Intelligent massage, in addition to the baby's being put to the breast at regular hours instituted before the appearance of the milk, will add greatly to the comfort of the mother after lactation has been established. With it excessive congestion and engorgement, the so-called "caked breast," and other troublesome conditions that often inflict unnecessary pain upon the mother will become less evident.

To keep a breast during the period of lactation in a healthy state it is necessary that its evacuation should be thorough and at regular intervals. If the child is strong its application to the breast every two hours during the day and every three hours during the night should suffice. If the secretion, however, is excessive, other active measures should be applied. The breast-pump or a gentle massage toward the nipple will relieve

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the discomfort. To assist the organ to remain within its normal confines, a breast binder properly applied, with the glands well pressed forward upon the chest toward the median line and away from the axillary spaces, will encourage the natural process with the greatest possible comfort to the mother.

DISCUSSION.

DR. THERESA BANNAN, Syracuse (by invitation).—Mr. President: I think this subject is of such great importance and has been so beautifully and scientifically presented that it deserves a full discussion before such a meeting as this.

I have been looking for milk fever for twenty years in my practice, and I have not found it. I do not believe Dr. Reder finds it.

The question of the care of the nipple of the expectant mother is of far-reaching and of tremendous importance. It solves 50 per cent. of the problems of pure milk. It means not only the safety, the health of the mother, but the life not only of the first child when most of the difficulties arise, but of all her subsequent children. If we have a disturbance which comes from neglect of the ordinary precautions of cleanliness, we make the mammary gland a pathological organ incapable of performing its functions, and condemning the future of the child to the chilly comforts of artificial feeding. The causes of these things are multiple. In the first place, the vast majority of all complications of the mammary glands occur in the first pregnancy. A girl is very often modest, in fact so much so that she does not keep the genital organs, including the mammary glands, and the nipple, clean, and as Dr. Reder has said incrustations form by the oozing of the milk. The question resolves itself into the preliminary care, but very often we do not see a woman until she is in labor, or sometimes a week before labor. The principal thing of all is friction of the breast and perhaps the recommendation to use alcohol is a good one because the human mind is so constituted that if you give a patient something to rub on other than soap and water it has a greater mental effect. I have not been able to find the milk fever described in the text-books. I do not find any rise of temperature primarily between the third and fourth day, especially the fourth day. You get enlarged, congested mammary glands, especially in the lower and external quadrant, where from the position in lying down the milk stagnates, and the measures which the doctor has recommended of bandaging and massage during that one day, if the baby is unable to get the milk out, restores the gland. But I do believe that if a great deal of the energy we spend on the question of certified milk was given to the instruction and care of the expectant mother, according to the means just laid down, we would be doing more for the health of our babies and our women.

There is one question the doctor did not bring out which I

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would like to emphasize, and that is the necessity of persistent suckling. Even when the milk starts to come on the eighth or ninth day, when the mother begins to get up, the milk is secreted from the stimulation of the nipple which is produced by the action of the mouth of the child on the nipple. Just as soon as the mother or the nurse or the doctor tries to help out the feeding of the baby by occasionally using the bottle, just so soon will the baby not get the milk easily, refuse to exert stimulus on the nipple that extends to the back of the acinous gland, and sends forth its volume of fluid. We leave our patients on the eighth or ninth or tenth day to the care of the friends and expect the woman to nourish the child without supervision. In two or three weeks she is constipated; perhaps anemic; perhaps she never goes out-doors; she may have been anemic before this, and we do not give these women that intelligent supervision in the nursing of the children afterward that we should. A woman who is nursing is a good deal of a brooding animal. She is peculiar psychologically as a pregnant woman, and we must consider these things and remember she has an ogranism, and she is to be treated in all the parts of the body as if she were not pregnant; that is, to correct the ordinary faults of elimination or feeding, and things of that kind.

I certainly congratulate Dr. Reder on what appears to me as sane, sensible, and simple philosophy, and because it is so simple it is scarcely appreciated, as is all high art.

Dr. William Gordon Dice, Toledo.—I wish some of our patients could have heard this paper rather than the men here. As the essayist has well said, it is the general practitioner who is at fault to a great extent. I think patients are willing to take proper care of the breasts if given proper instructions, and I recall seeing in my own practice but two cases of abscess of the breast in ten years. There is one thing which we do see occasionally. There are patients where it would seem that, in spite of the preliminary care, we do have this marked engorgement of the breast on the third day. I recall one case in particular of a woman who told me that with every pregnancy her breasts fill up within an hour's time to such an extent that they become wooden in hardness, and massage, the breast pump, or a strong vigorous child have no effect upon them. Taking the cue, during her next pregnancy, instead of letting the nurse fill her up with liquids, as she has been doing, I eliminated the liquids absolutely and with most gratifying results. She had a severe time in her previous pregnancies "when the milk came in," but by cutting down the liquids from the time the child was born, giving her more soft diet, she went through her last pregnancy with the greatest of comfort and with no trouble whatsoever.

Dr. Abraham J. Rongy, New York (by invitation).—I thought the term "milk fever" had been eliminated from ob-

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stetrical work. In a record of 6,000 cases is both hospital and private work, we practically had nothing of what is known as mastitis. We have never had suppurative mastitis. It seems to me that with these engorged breasts it is a question of doing too much for the patient rather than too little. The question of massage, the application of hot poultices, the use of the breast pump caused more mastitis than any other condition in the line of obstetrics.

At the Jewish Maternity Hospital we take care of about 2,000 cases yearly and in the service of Dr. Waldo at Lebanon Hospital our plan of treating these cases is very simple. We never massage the breast. We never use the breast pump, we practically leave the breasts alone. In hospital work the treatment is simple. As soon as the breasts become engorged we put one or more babies to that breast and the engorgement very shortly is relieved. In private practice this is hard to carry out.

When we find the breast engorged, a tight binder, and an ice bag is immediately put on, the fluids are cut down, a saline cathartic is given and in twenty-four to thirty-six hours the woman is relieved.

Not long ago at the Johns Hopkins Hospital the noninterference with the breasts during their engorgement was tried and proved very successful. I followed out this plan in a number of cases and the congestive period of the breast was not in any way prolonged. It is purely a question of temporary congestion of the breasts, which will relieve itself if they are not injured by mechanical manipulation.

The application of alcohol to the nipples during pregnancy I think is ideal; every patient is instructed to bathe the nipples in warm alcohol for about five minutes four or five times a week beginning with the sixth month of pregnancy. The patient is also instructed to draw the nipple out, as this has a tendency to harden them. When the nipples show a slight tendency to crack on the second or third day postpartum we immediately apply a 4 per cent. aristol and olive oil ointment. We do not wait until the woman begins to complain of cracked nipples or painful lactation but on the slightest abrasion of the nipple the above application is made.

The main principles to observe in these engorged breast conditions is to leave the breasts alone as much as possible. If there is any tendency to engorgement an ice bag may be applied. Any mechanical manipulation will injure the breast, particularly so when it is severely engorged.

DR. J. H. CARSTENS, Detroit.—There seems to be some misunderstanding in regard to the position taken by Dr. Reder. In this excellent paper I understand he makes the point of having the breast prepared to do its work when the time comes. These women neglect to call a doctor, and, if they do, the doctor neglects to look at their breasts and examine them and find out whether they are in condition and what should be done. I can

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endorse everything Dr. Reder has said. We try to make the breasts of these women strong, but we may differ as to the method of accomplishing it. Johnson and Jeffries developed strength by working, by exercise, and so we can toughen the nipple and make it hard and able to resist by exercise, and that is what Dr. Reder does and says, and I very decidedly object to putting on alcohol or tannic acid or other astringents that toughen the nipple. The woman wants her nipple soft and pliable and toughened by exercise, because that is what it is subjected to afterward.

DR. REDER (closing the discussion).—I am very appreciative of the remarks made in the discussion of my paper, even though my friend, Dr. Rongy, has been a little antagonistic to the views expressed. I have been told that usually my papers are too long, and that is the reason I did not refer to the health of the mother, or to the proper care of the mother when she is up and about, but the remarks you have heard from those who have taken part in this discussion are very apropos indeed.

In regard to the use of alcohol on the nipples; I use it occasionally, but it is very rarely. Only when I have what is known as a sensitive nipple, not a sore nipple, one that does not yield to massage, do I advocate its use.

So far as relieving the breasts of their engorgement is concerned, we cannot always have three or four babies at our disposal, and therefore must have recourse to other measures. I have found young pigs splendid substitutes for the babies. Gentle massage has answered nearly every purpose and has proven satisfactory in my experience.

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ACUTE PANCREATITIS, WITH REPORT OF CASES.

BY
JOHN W. POUCHER, M.D.,
Poughkeepsie, N. Y.

FORTUNATELY, acute hemorrhagic pancreatitis is not a very common disease, else with our present means of early diagnosis it would be perhaps the most formidable of the acute maladies with which the surgeon is called upon to cope. To the members of this association it may not be so rare or even so formidable, for as surgeons and consultants many of the Fellows have, within the past ten or fifteen years, had occasion to become fairly familiar with it. But it is to the profession at large a far different matter. In the majority of cases it comes upon patients who have for years been subject to attacks of gallstone colic or attacks of indigestion or cramps and who believe that this attack is only another, perhaps a little more severe attack than usual, and it is only by the persistence of some of the more alarming symptoms, such as continuous pain, a labored respiration, rapidly increasing pulse, the appearance of tumor or uncontrollable vomiting that a surgeon is finally consulted, and then it is frequently too late.

Positive methods of diagnosis between acute pancreatitis and other diseases of the upper abdomen exist, but they are complicated and take up altogether too much time. Cammidge's pancreatic reaction of the urine or the examination of the feces for fat or pancreatic ferment are processes for the laboratory and, although of unquestioned value in the chronic or subacute forms of the disease, require too much time to help us in the more acute cases.

As the other lesions for which this disease may be mistaken, perforation of the stomach or duodenum or rupture of the gallbladder or its ducts, all require prompt surgical attention, the earliest possible exploratory incision should be urged. Most of us are acquainted with people who have for years suffered

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from periodical attacks of the severest kind of pain caused by the passage of gallstones from the gall-bladder or by stones sacculated in the common duct which make a periodical effort to escape. These people steadfastly decline operation, many of them, because some one, and frequently this some one is a physician, has told them that they can be cured by olive oil, sodium phosphate, or some other nostrum. It is chiefly this class of patients that furnish all forms of pancreatic disease. Such was the history of one of my recent cases.

A male; sixty-three years of age; a brewer; a stout, robust man with a fatty abdomen. He had a history of attacks of acute epigastric pain extending over a period of ten or fifteen years. I saw him in consultation five years ago just after one of these attacks. He was then markedly jaundiced; very tender over whole upper part of abdomen; no fever. Diagnosis at that time was stone in common duct causing obstruction. Operation was advised and was under consideration for some time, but as he had a long respite from pain after that attack, operation was indefinitely postponed. He continued to have attacks, however, more or less severe until on May 14, 1910, he was seized with one so severe as to cause an almost complete collapse. Two physicians were called who gave him temporary relief. Next day the patient began vomiting, which continued, and on the sixteenth became fecal. It was on this day, the third after the onset of the attack, that I saw him. His expression was bad, respiration labored, pulse rapid, temperature 101°. His record showed that the highest temperature the day before was 99°. There was no jaundice. His face, naturally full and florid, was decidedly livid; lips cyanotic. Abdomen, naturally large and full, was only moderately distended; pain had almost disappeared. Diagnosis: intestinal obstruction.

The patient was prepared for operation as soon as possible, but in the meantime his respiration became more labored; his temperature rose to 103°. There was no blood or fluid in the peritoneal cavity. The omental and abdominal fat was studded with numerous yellowish-brown patches of necrosis. The intestines were only moderately distended and of a reddish-brown color. The mesentery was dry, shiny, edematous, and very friable. The liver was normal, while the gall-bladder was small. The pancreas was enlarged to three or four times normal size. There was no hemorrhage in the lesser peritoneal cavity, which was drained with gauze and a large rubber tube.

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The pancreas was not incised, as I did not think the condition of the patient would warrant it. There was no stone in the duct as far as it could be explored, but still there may have been one, as it did not seem possible to reach the portion of the duct that was enveloped by the swollen head of the pancreas. The intestine, which was apparently paralyzed, was opened by removing the appendix, then drained of its contents and irrigated through the tube which was left in the intestine for drainage. He rallied somewhat, but his temperature continued to rise until his death, about ten hours afterward.

My second case was a very slight man, fifty-one years of age, who weighed only 118 pounds, and, though a bartender, was very temperate in his habits. He had never had gallstone or gall-bladder trouble to his knowledge, though a chronic dyspeptic. He had complained of pain in back and right side and had been confined to his house for about a week, apparently with grip. On the second day after return to his work he was taken with a sudden epigastric pain which was very severe. Next morning he noticed a swelling in the epigastrium to which he called the attention of his physician. I saw him the same day; found a large tumor which seemed to fill the whole upper part of the abdomen, which had a rather fluctuating "feel" upon palpation. He was suffering very little or no pain; had no fever and no tympanitis nor jaundice; respiration was labored; pulse 130; urine contained considerable albumin, hyaline and granular casts.

He was removed to the hospital and operated upon the same day. There was considerable bloody serum in the general peritoneal cavity. The omentum contained a few small necrotic patches. After packing off the cavity with gauze, the gastro-hepatic omentum was opened and a mass was found to consist of a large quantity of blood only slightly clotted and a large pulpy pancreas; the blood was quickly removed and the cavity wiped as dry as possible with gauze sponges. There was very little hemorrhage at the time, so I placed in two large rubber tubes, packing them well around with gauze. I did not incise the pancreas. No stones were found, although, as in the other case, there may have been one either in the pancreatic portion of the duct or in the ampulla. The gall-bladder was small and free from stones, though the liver was large and very soft. The wound drained very freely, though I had a great deal of trouble in getting away the gauze. It was about eight weeks before the sinus was entirely closed. This patient has made a very slow

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recovery, and is suffering at the present time from a chronic interstitial nephritis.

Judging from this limited experience, I consider acute hemorrhagic pancreatitis an almost afebrile disease until secondary changes take place in the tissues of other organs. In my first case the fever only began after the action of the ferment had destroyed the function of the intestine and probably other organs in the abdomen. In the other case a prompt and efficient drainage prevented any serious action upon the tissues of the organs. In this case there never was more than a slight rise in temperature. My experience, then, in these two cases seems to point to two conclusions, namely, early and free incision down to the pancreas and adequate drainage.

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ACUTE HEMORRHAGIC PANCREATITIS WITH REPORT OF CASES.

BY
JOHN W. KEEFE, M. D.,
Providence, R. I.

ALTHOUGH Senn twenty-five years ago and Fitz three years later by numerous experiments and masterly essays gave us a clearer conception of diseases that affect the pancreas, the medical profession were slow to take advantage of this knowledge. During the past five years, however, diseases of the pancreas have been a frequent topic for discussion and surgeons now have a better knowledge of the subject and rational methods of surgical attack have been developed.

The anatomical relations of the pancreas, the lesions which affect it, and their etiology were so obscure, that until comparatively recent times very little had been accomplished in the way of accurate diagnosis and early surgical interference. It is only by repeatedly calling to the attention of the profession the fact that diseases of the pancreas occur more frequently than we were wont to believe, and by carefully studying the etiology and accurate histories which include intelligent observations of the symptoms and signs in a large number of cases, that we, some day, may be as certain of making as correct a diagnosis of acute hemorrhagic pancreatitis as we are to-day of acute appendicitis.

Acute hemorrhagic pancreatitis, and suppurative and gangrenous pancreatitis are merely different stages of the primary disease. Hemorrhage into and about the pancreas may be the only lesion found to explain a sudden death. We may briefly refresh our memories by a review of the location of the pancreas. The gland lies retroperitoneally, behind the stomach at the level of the first lumbar vertebra. The head is embraced by the second and third portions of the duodenum, opposite the second and third lumbar vertebræ. The neck extends, about 3 cm. in length, obliquely upward to the left, where it joins the body, which extends transversely to the left becoming the tail that reaches the hilus of the spleen.

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The pancreas in front is in relation with the duodenum, the gastrocolic omentum, transverse colon, and stomach. Posteriorly it rests upon the inferior vena cava, left renal vein, aorta, superior mesenteric vessels, thoracic duct, left kidney, and suprarenal capsule. The splenic artery and vein and the hepatic artery are in relation to the posterior surface and upper border. The fourth portion of the duodenum and the beginning of the jejunum are inferior, while above and to the right of the neck and head are the gastroduodenal and pancreaticoduodenal arteries. The common bile duct passes along a groove in the head of the pancreas for a distance of from 2 to 9 cm., in about one-third of the cases, and is embraced by the head of the pancreas in the other two-thirds.

The pancreas is made up of acini grouped into lobules that secrete the pancreatic juice, which drains either into the duct of Wirsung or the duct of Santorini. The islands of Langerhans occupy a central position in the lobules and are distinct from the acini in structure and appearance. They have no ducts but connect directly with an efferent bloodvessel. They control the internal secretion of the pancreas. The duct of Wirsung, usually larger than the duct of Santorini, passes through the entire length of the gland and for a distance of 2 cm. lies parallel with the common bile duct with which it joins and forms the ampulla of Vater which is situated from 8 to 12 cm. below the pylorus. The average length of the ampulla is about 4 mm. The duct of Santorini drains the larger of the two lobes which form the head of the pancreas. When patent, which is so in about one-half of the cases, it enters the duodenum by a small papilla just above the Vaterian papilla. It usually anastomoses with the Wirsungian duct. It is found at times larger than the duct of Wirsung; thus occlusion of the latter may cause but slight disturbance.

The blood supply of the pancreas is derived from branches of the splenic, hepatic, and superior mesenteric arteries, named the superior and inferior pancreaticoduodenal arteries, and their numerous branches. The efferent vessels empty into the portal system through the splenic and superior mesenteric veins. Experiments have shown that an animal can live but a few days at most after complete removal of the pancreas, thus proving that the pancreatic juice and the internal secretion of the pancreas are essential to life. We know comparatively little of the *modus operandi* of this internal secretion, nor of the internal secretions of the thyroid gland, the parathyroid bodies, Brunner's glands, the suprarenals, and the testes. We know that the island

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of Langerhans elaborates the internal secretion of the gland and that this secretion controls the assimilation of sugar or, as one author states, the metabolism of the carbohydrates.

The relative positions of the pancreatic and common bile ducts and the frequency with which the bile channels become infected, and the subsequent tendency to the formation of biliary calculi, render the pancreas vulnerable, most commonly, at the ampulla of Vater. The most common cause of pancreatitis is some previous infection of the biliary tract. We may have the infective material carried to the pancreas through its ducts by a stone becoming arrested in the ampulla of Vater, occluding the outlet through the greater papilla; and yet the stone so small that it does not completely fill the ampulla, thus allowing the bile to enter the pancreatic duct direct. A stone lodged in the common duct at a point where this duct lies parallel to the pancreatic duct may so press upon the latter duct as to cause occlusion of the same, thus preventing the outflow of the pancreatic secretion. Enlargement of the head of the pancreas from any cause may produce occlusion of the common duct and cause secondary changes in the bile ducts and liver. Catarrhal jaundice may be produced in this manner.

Infective material may enter the pancreas through the blood-vessels or the lymphatics. Near the head of the pancreas we find that the efferent lymphatics from the gall-bladder meet the efferent lymphatics from the pancreas. Intestinal contents may enter the ampulla of Vater following the dilation of its duodenal opening by a stone. We must not lose sight of the fact that pancreatic calculi may also give rise to symptoms. The characteristic lesion found in pancreas disease is fat necrosis. The presence of fat necrosis always means that there has been sufficient injury of the gland to allow the escape of its fat splitting ferment, which reduces the fat molecule into a fatty acid and glycerin. The acid combines with calcium-forming calcium salts. Numerous small, opaque, white or yellow areas spoken of as areas of multiple fat necrosis have been found in the omentum, mesentery, subperitoneal fat, retroperitoneal fat, in the pancreas, diaphragm, and heart. Frequently a narrow hemorrhagic zone surrounds these areas.

The symptoms of acute hemorrhagic pancreatitis are either a history of occasional attacks of indigestion or of no digestive disturbance; or infection of the bile passages; sudden excruciating pain in the epigastric region radiating to the left and through to

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the back; the pain usually more severe than that due to gastric perforation or gallstones. Large doses of morphia give but slight relief. Nausea followed by vomiting at frequent intervals occurs; but the vomitus is seldom fecal; the sudden seizure is followed by collapse, or varying degrees of shock. In some instances there is a cyanotic appearance or lividity and the facial expression is extremely anxious. The temperature at the onset is subnormal and, as a rule, but slightly elevated even in the later stages; cases, however, have been reported with a high temperature almost from the beginning of the attack. The pulse rate is increased in frequency or is feeble and at times scarcely perceptible. Dyspnea is a prominent symptom and hiccough may be very distressing.

There is rigidity in the epigastric region most marked over the left rectus muscle and tenderness on pressure midway between the end of the ninth rib and the umbilicus. Soon we have epigastric distention which is tympanitic on percussion and there is a board-like rigidity over the abdomen and pain in the back, especially in the costoiliac space on deep pressure. Usually the bowels are constipated but there may be diarrhea. An acute anemia may supervene. Occasionally a mass may be felt in the region of the head of the pancreas. Jaundice may precede or occur during the attack. There is an increase in the leukocytes and especially an increase in the polymorphonuclears. In rare cases sugar may be present in the urine, especially during the early stages of the disease; but it is usually absent. Fat may be found in the stools which are soft and may look like butter or may be oily and are very offensive. Nuclei are present in the muscle fiber found in the stools if the pancreas has undergone complete degeneration.

The Cammidge reaction C is said to be of undoubted value, by Robson and Cammidge, when considered with the clinical symptoms, a complete analysis of the urine, and a chemical examination of the feces. Goodman and Speese considered the Cammidge reaction of value from the positive results they obtained by examinations following the production of pancreatitis in dogs by ligating the pancreatic duct. Willis, McGrath, Pilcher, and Balfour working under the direction of Wilson, director of laboratories at Rochester, Minnesota, after unusual and painstaking methods of making the Cammidge test C and eliminating the bias in judgment which the laboratory technician is prone to, when he is familiar with the clinical history of the

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case, give the following as one of their conclusions—namely, "That even when the most elaborate care is exercised to follow the technic of Mr. Cammidge's C reaction, in the most uniform manner, if knowledge of the clinical histories and other factors of the personal equation be eliminated, the end results, judged by Mr. Cammidge's own criteria, must be considered as a means of diagnosticating disease of the pancreas, as both valueless and misleading."

Perforation of the stomach, duodenum, and gall-bladder give symptoms which resemble acute hemorrhagic pancreatitis. In duodenal ulcer we have pain before meals when the stomach is empty, and hyperchlorhydria with eructations. A careful study of the previous history, the sudden onset of unbearable pain in the epigastric region, vomiting often continuous, shock, localized tenderness in the epigastric region and costoiliac space, low temperature, rapid pulse, severe dyspnea, cyanosis, anxious expression, rapid distention in the epigastric region, with a chemical examination of the urine and stools should make us reasonably certain of a diagnosis of pancreatitis. If one is in doubt an exploratory operation is advisable as soon as the patient rallies from the period of shock. If upon opening the abdomen one finds the omentum, mesentery, or other parts studded with white or yellow plaques of fat necrosis or beef-broth-like serum, we should at once look to the pancreas for the cause.

Treatment.—In the early stages morphia, enteroclysis, and supporting measures. The operative measures are carried out usually by making an incision in the region of the right rectus above the umbilicus. An opening is then made through the gastrocolic or gastrohepatic omentum. Multiple incisions may be made in the peritoneum covering the pancreas, or the gland itself may be incised. Whether secondary operations upon the bile passages should be performed at once, or whether it may be more desirable to wait until the patient has recuperated somewhat from a severe illness, by drainage of the pancreatic area alone is a problem worthy of consideration. The correctness of the judgment of the operator may be the saving factor for the patient. The pancreas is sometimes drained through the costoiliac space; but the numerous bloodvessels found posterior to the pancreas have deterred surgeons from preferring this route. Thorough drainage has at times been employed and in certain cases it would seem to be desirable. Opening the abdomen alone

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may effect a cure, which we also know may happen in tuberculous peritonitis.

CASE I.—*Acute Hemorrhagic Pancreatitis. Bloody fluid in the Abdominal Cavity. Fat Necrosis. Gall-bladder and Ducts Normal. Drainage. Recovery. Twenty Months later Operation Pancreatic Cyst. Drainage. Recovery.*

A negro, forty-two years of age, was admitted to the Rhode Island Hospital, August 2, 1909, on the service of Dr. W. L. Munro and gave the following history: one week before entering the hospital he was taken with sudden sharp pain in the epigastrium with severe and repeated vomiting. Prostration was marked at the onset, then the patient recovered somewhat but has been confined to his bed, suffering from constant pain in the epigastric region, dull and aching in character. On the day of admission his breathing was rapid, expression of the face anxious, and he looked acutely sick. The tongue was coated and the breath heavy. The abdomen was moderately distended. Tenderness most marked in the right upper quadrant over the gall-bladder region. There was rigidity on the right side of the abdomen with considerable muscular spasm.

Operation.—August 4, 1909. Dr. W. L. Munro. High right rectus incision. Areas of fat necrosis were found about the intestine and omentum. The gall-bladder was normal. The head of the pancreas was enlarged and very hard and greenish in color. A quantity of serosanguineous fluid was found in the abdominal cavity. The patient's condition became serious from the shock of the operation and the abdomen was closed with drainage. He recovered in thirty-seven days and was discharged relieved of symptoms.

April 5, 1910, the patient was readmitted to the Rhode Island Hospital on Dr. Keefe's service. For four months he has had a slowly growing mass in the epigastrium, accompanied by chronic indigestion and occasional aching pain. On the day of admission he was seized with a sudden sharp pain and collapsed while walking in the street. He was brought to the hospital in the accident ambulance.

April 9. Operation. Dr. Keefe. Gas-ether. Upon opening the abdominal cavity a large cyst was found which originated in the body of the pancreas. It was filled with a large quanity of dark fluid which resembled altered blood. The cyst was sutured to the parietal peritoneum and a drain was inserted. The patient was discharged three weeks after the operation.

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The wound was completely healed and the patient was entirely relieved of symptoms.

CASE II.—*Acute Hemorrhagic Pancreatitis. General Peritonitis, Fat Necrosis. Died.*

The patient was a man fifty-three years of age. I saw him with Dr. Chesebro, his physician, November 7, 1906, and he was admitted to the Rhode Island Hospital.

He has had considerable gastric disturbance for the past two years. Two days ago while on his way to work he was seized with a pain in the region of the umbilicus. He vomited a large amount on several occasions. The pain increased in severity at night. Pulse 108. Temperature 99°. Respiration 24, white count 12,400. The abdomen is much distended and is tympanitic. Very tender on pressure all over the abdomen. There is movable dullness in both flanks indicating free fluid in the abdominal cavity.

November 7. Operation. Dr. Keefe. Gas-ether. Incision in the median line below the umbilicus. About one quart of thin yellow fluid was found in the abdominal cavity. The appendix was normal. The incision was enlarged upward, the gall-bladder and stomach were found normal. The intestine was injected but no perforations were found. The omentum was matted together in places, which proved to be areas of inflammation. Areas of fat necrosis were found in the omentum and mesentery in the epigastric region. No enlargment of the head of the pancreas. Two cigaret drains were introduced down to the pancreas and the wound closed about these drains. The patient died shortly after the operation. No autopsy.

CASE III.—*Acute Hemorrhagic Pancreatitis. Bloody Fluid in the Abdominal Cavity. Gall-bladder and Ducts Normal. Died. Autopsy.*

A man. Forty years old. Admitted to the Rhode Island Hospital, June 19, 1908. 11:00 A. M. At 9 o'clock last night he was taken with abdominal pain which lasted a few minutes. He went to work this morning and at 9 o'clock he was again taken with general abdominal pain and went home. The pain grew worse and he vomited several times. Morphia given when sent to the hospital. Pulse 140, temperature 98° and respiration 45. White count 25,000. The countenance is pale and the body is covered with perspiration. The abdomen is rigid and tender all over. There is general dullness over the abdomen.

Operation.—Dr. Hollingsworth. Cocaine as a local anesthetic.

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McBurney incision. About a pint of reddish fluid escaped from the peritoneal cavity. The appendix was not found nor was there any inflammatory condition about the cecum. The patient was in poor condition. Three large cigaret drains were introduced and the wound closed about these drains.

June 20. Died 2:00 A. M. Autopsy made sixteen hours postmortem. The abdominal cavity contains a thin, brownish-red fluid, there is slight injection of the bloodvessels of the parietal and visceral peritoneum but very little loss of the glistening quality of its surface. Appendix normal. Pancreas shows marked changes. About three or four cm. from the right end the nearly normal tissue begins to be replaced by friable necrotic tissue and clotted blood. This condition extends for 5 cm., including the whole of that part of the body of the pancreas. Very little change from the normal is found in the tail. The tissues immediately about the pancreas show fat necrosis and are infiltrated with clotted blood. No obstruction of the pancreatic or bile ducts found. The gall-bladder is normal and not distended; its contents are normal.

CASE IV.—*Acute Hemorrhagic Pancreatitis with Fat Necrosis. Brownish, Black Bloody Fluid. Gall-bladder and Ducts Normal to the Touch. Died. Partial Autopsy.*

A man forty-eight years old entered the Rhode Island Hospital November 15, 1908, on Dr. Cutts's service. The patient was well until eight days ago when he was suddenly taken with severe pain in the epigastric region followed by vomiting. The pain and vomiting have continued. Four days ago he became jaundiced. Constipated. Pulse 116. Temperature 99.8°. Looks moribund. Patient is conscious and is able to give a little history but is very sick. There is marked jaundice. A large firm mass the size of a croquet ball fills the epigastric region and is situated a little more to the right than to the left of the median line. The mass is not movable or very tender on pressure. It was thought to be an enlarged gall-bladder filled with pus. The lower abdomen is held quite tense. History of syphilis eleven years ago.

Operation.—Dr. Cutts. Ethyl chloride and ether. An incision at the outer edge of the right rectus over the tumor mass in the epigastrium was made. The mass which was adherent to the abdominal wall consisted on the outside of adherent omentum. An opening was made through the omentum into the mass, and a brownish-black fluid with a peculiar odor es-

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caped. The gall-bladder was normal to the touch. The omentum showed small white areas, 1/8 inch in diameter, of fat necrosis, which was also proved to be so upon microscopical examination. The abdominal incision was closed about the drains with through-and-through sutures of silkworm gut.

November 18. Died. The kidney, pancreas, and portions of the liver and mesentery were removed through the operation wound after death. The pancreas is of a deep pink color but its surface is covered in places with black and gray necrotic tissue and blood clots. It is firm in consistence. In places yellowish areas are seen under the surface which vary in size from a few mm. to 2 cm. in diameter. On section the cut surface is of a brownish-yellow. Hemorrhagic areas are scattered over it. The yellow areas previously noted are found to invade the pancreatic tissue to some depth and they are also scattered throughout the substance of the organ. They are composed of soft necrotic tissue. There is some extravasation of blood into the pancreas.

CASE V.—*Acute Hemorrhagic Pancreatitis. Straw-colored Fluid in the Abdominal Cavity. Fat Necrosis. Gall-bladder and Ducts Normal to Sight and Touch. Drainage. Recovery. One and One-half Years Later Four Gallstones Removed at Operation. Recovery.*

I saw with Dr. Joseph Bennett, December 16, 1908, a married woman twenty-five years of age. She has had three children, the eldest four years old, and she is now nursing the youngest child who is five months old. Never any serious illness. Ten days ago she was seized with severe abdominal pain located in the upper half of the abdomen. The pain radiated through the back and up to the right shoulder. The pain is independent of the time of the ingestion of food. Vomited several times. The vomitus looks like the white of eggs, or is thin and greenish in color. Conjunctivæ slightly yellow. Four days after the onset she was up and about the house, but did not feel well. She has taken very little nourishment since her illness.

December 16. To-day she was again seized with severe epigastric pain and was in a state of collapse when I first saw her. The face was ashen-gray, and the expression was extremely anxious. She looked like one *in extremis*. The pulse was rapid and thready but the temperature was normal. The abdomen was distended. Muscular rigidity was very marked especially in the epigastric region. No mass could be felt by palpation.

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The tongue is yellowish, brown, and dry. The patient was transferred to the Rhode Island Hospital and rallied under stimulation.

December 17. White count 20,000. Temperature 101.8°. Considerable pain but not enough to require anodynes.

December 18. Patient looks sick and is more uncomfortable; the pulse is weaker. Urine is of high specific gravity and contains sugar and a few hyaline casts. A second specimen showed no sugar present.

Diagnosis.—Acute pancreatitis or perforation of the stomach, duodenum, or gall-bladder.

Operation.—Dr. Keefe. Ethyl chlorid and ether. Incision 4 inches long just to the right of the median line commencing at the free border of the ribs. A small amount of free clear fluid was found upon entering the abdominal cavity. The omentum and mesentery were found studded with small white areas of fat necrosis. Attention was now given to the pancreas by making an opening through the gastrocolic omentum. The pancreas was large and had softened areas of necrosis. Three large cigaret drains were inserted down to the pancreas. The gall-bladder and ducts were carefully palpated, but no stones could be detected. The gall-bladder was normal in thickness and color and looked absolutely healthy. It was filled with a normal quantity of bile and bile could be forced out of the gall-bladder by pressure. The gall-bladder was not drained. The wound was closed about the cigaret drains.

December 20. Patient fairly comfortable, wound has drained freely. One drain removed. December 21. Bowels moving freely, normal in color. Second drain removed. December 22. General condition improved. Third drain removed, wound irrigated, and a small cigaret drain inserted. December 30. Daily dressings, thin discharge containing pancreatic juice which irritates the skin to a slight degree. Urine shows no sugar but a few hyaline cases are present. There were sixteen examinations of the urine made on different days but only on December 18 was sugar present and then only a small amount.

On January 8 and 15 she vomited and had rise of temperature, which may have been brought on by a too generous diet. January 25 the patient was discharged from the hospital and a few weeks later the sinus was entirely closed.

The patient was readmitted to the Rhode Island Hospital June 15, 1910, and I am indebted to Dr. W. L. Munro for per-

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mission to publish the subsequent history, which I obtained from the hospital record. Two years ago the patient was admitted to the Rhode Island Hospital and operated upon by Dr. Keefe; diagnosis of acute pancreatitis having been made and confirmed at operation. The patient was discharged improved after an uninterrupted convalescence. Her health has been good since the previous operation, until the onset of the present trouble. The patient has increased about forty pounds in weight, appetite and digestion good, bowels fairly regular, no symptoms.

Four days before the present admission the patient had a severe attack of pain in the epigastrium, radiating through to the back and accompanied by nausea and vomiting. Pain has continued steadily but the patient has not vomited since the onset. The bowels have been constipated; the patient has eaten practically nothing. The attacks of pain are not associated with the taking of food, position, or bowel movements. No urinary symptoms, no alcoholic stools, and no jaundice. Examination negative except for abdomen. Abdomen is slightly distended and tender throughout. Marked tenderness and rigidity is found in the right upper quadrant and on deep palpation an indefinite mass can be made out, lying in the epigastrium, more to the right than to the left of the median line. The mass lies under the scar of the previous operation, it is not movable and does not appear to be attached to the abdominal wall. There is dullness on percussion.

June 18. The patient has had some pain but not severe since admission; the pulse and temperature have continued normal.

June 24. The patient had a severe attack of pain, accompanied by rise of temperature and pulse rate. She vomited repeatedly small quantities of yellowish-green fluid.

June 25. Operation. Cholecystostomy by Dr. Munro under ether anesthesia. An incision was made in the right epigastrium, near to and partly including the scar of the previous operation. The intestines, stomach, and gall-bladder were adherent to the parietal peritoneum and to each other. The head of the pancreas was normal in size, indurated, and buried in a mass of dense adhesions. The gall-bladder was freed from adhesions with difficulty and opened. Four gallstones about the size of a cherry pit, with a small amount of bile mixed with mucus and pus were removed. Cultures were taken from the gall-bladder. A rubber drainage-tube was inserted into the gall-bladder and held in place by a purse-string suture. The gall-bladder was an-

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chored to the partial peritoneum by sutures of plain catgut. The ducts were explored and though buried in dense adhesions seemed free from obstruction. The abdomen was closed by a figure-of-eight through-and-through suture of silkworm gut. Two large cigaret drains were placed at the head of the pancreas and common duct.

June 27. The patient vomits frequently. Draining very little through the tube. There is a purulent discharge along the drains. The temperature continues high. The patient complains of pain in the incision. In the afternoon the patient had an attack of severe pain, accompanied by symptoms of collapse. Marked dyspnea. Atropin, strychnia, and nitroglycerin given subcutaneously with oxygen inhalations. This attack lasted about an hour.

June 30. Patient much better. Drainage-tubes shortened. Temperature is gradually approaching normal.

July 4. The stitches were removed. The wound is healing by granulation. Patient in apparently good condition; temperature ranges from about 100° to normal.

July 10. The tube was removed. No further suppuration of the wound. There is a sinus to the gall-bladder which discharges normal bile. The patient is comfortable.

July 20. The patient is sitting up in bed. The wound is discharging bile freely. The pulse and temperature are normal.

August 8. Convalescence uninterrupted. The sinus to the gall-bladder shows no tendency to close. Draining freely.

August 20. The patient was discharged to-day improved. She has had no return of symptoms. She still has a small sinus leading to the gall-bladder which discharges a small amount of normal bile daily. The stools are normal in color.

CASE VI.—*Cholelithiasis, Acute Hemorrhagic and Gangrenous Pancreatitis. Fat Necrosis. Sugar in Urine. Died. Autopsy.*

A woman sixty-five years of age I saw with Dr. Edward S. Allen on February 16, 1909, and obtained the following history: Two years ago the patient had an attack of pain in the right hypochondrium accompanied by nausea and vomiting. A diagnosis of gallstones was made at the time. Six months ago she had a second attack with well marked jaundice. About three weeks ago she had pain in the gall-bladder region, with temperature ranging from 99 to 100°. The bowels are constipated. There is great tenderness upon pressure over the right epigastric region. Two days ago she began to vomit and the

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vomiting has persisted ever since. The urine contains sugar. There is muscular resistance in the right hypochondriac region. Operation was not then advised, owing to the feeble condition of the patient and the presence of sugar in the urine. Later a mass developed to the right of the median line, in the epigastric region.

Diagnosis.—Gall-bladder disease with gallstones probably present and suppurative pancreatitis. Operation advised and performed March 4, 1909. The patient's general condition was very bad. Gas and ether were given for three minutes and a rapid operation performed. An incision was made over the mass through the right rectus into the abdominal cavity. The omentum was found to be adherent to the structures beneath the right hypochondrium. There were small white and yellow areas of fat necrosis in the omentum and mesentery. An opening was made through the gastrocolic omentum into the mass. A large amount of thin pus was evacuated from the region of the pancreas. The cavity was irrigated and a rubber tube and cigaret drains were introduced. The wound was closed about the drains by layer sutures. The patient improved temporarily, but gradually failed and died March 20, 1909.

Autopsy.—A number of gallstones were found in the gall-bladder but none in the ducts. Areas of fat necrosis were numerous in the omentum and mesentery. The operation wound led down to what little remained of the pancreas, nothing in the way of normal pancreatic tissue was found; it was merely a sloughing slate-colored mass.

Diagnosis.—Cholelithiasis, acute hemorrhagic pancreatitis, and later chronic suppurative and gangrenous pancreatitis.

CASE VII.—*Gallstones Removed. Drainage of Gall-bladder. Fifteen Months later Acute Hemorrhagic Pancreatitis. Died. Autopsy.*

A man fifty-four years of age was admitted to the Rhode Island Hospital on the service of Dr. E. B. Smith.

Twenty years ago he had an attack of pain in the right upper quadrant of the abdomen. Two years ago he had a similar attack and was jaundiced about one week. Three weeks ago he was seized with pain in the gall-bladder region, he became jaundiced and had clay-colored stools. He was constipated and the urine contained bile. He had considerable subcutaneous fat. There was slight resistance upon deep pressure in the right upper quadrant of the abdomen.

April 6, 1908. *Operation.*—Ether. A high incision was

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made through the right rectus muscle and upon opening the gall-bladder three large and thirty small stones were found and removed. A small stone could be felt in the cystic duct; but for some reason it was not removed. A drainage-tube was placed in the gall-bladder from which bile flowed the third day following the operation.

April 27. Three weeks after the operation the wound was healed and the patient was discharged.

The patient was readmitted to the hospital July 30, 1909, sixteen months later, on Dr. Munro's service. Six days before admission he was suddenly taken ill with severe pain in the upper part of the abdomen with repeated attacks of vomiting. He had a chill and perspired freely. The chills and sweats have recurred several times. The pain subsided into a dull persistent ache and was most marked in the gall-bladder region. There is marked prostration with difficult breathing. The pulse is rapid and weak. There is a hernia at the site of the operation wound. There is marked tenderness in the right upper quadrant and muscular rigidity over the entire right side of the abdomen.

August 2. Dyspnea is more severe and the abdominal distention has increased. The pulse is irregular and rapid.

August 3. The patient died.

Autopsy.—Numerous white spots are found throughout the great omentum; these are found on section to be necrotic areas. Adhesions of omentum and ileum to a hernial sac are found beneath the abdominal wound. There are dense fibrous adhesions between the tip of the gall-bladder, liver, and anterior abdominal wall. On the posterior wall of the abdomen are many yellowish necrotic areas from 1/2 to 1 1/2 cm. in diameter. These are more numerous about the duodenum and pancreas; but extend to the brim of the pelvis. Upon opening into the lesser peritoneal cavity, the stomach is found to be adherent to the pancreas and on separating these adhesions, an abscess cavity was found containing thick viscid yellow pus. White necrotic areas are found beneath the peritoneum on the anterior abdominal wall.

The pancreas is enlarged. It is greenish black in color and is almost entirely covered with yellowish, necrotic patches. In places the tissue appears increased in consistence and in other places it is soft. The head of the pancreas is firmer in consistency than the remaining portions. Upon section no typical pancreatic tissue is evident. The gall-bladder contains white

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viscid material. The walls are thickened and the mucous membrane is roughened. The cystic duct at its junction with the hepatic duct contains gallstones. Another gallstone is firmly lodged in the ampulla of Vater. A probe, however, can be passed down the common duct by the side of the stone into the duodenum. The stones are about the size of a white bean. Smears from the gall-bladder, the abscess about the pancreas, and the necrotic areas in the omentum all show pus cells, degenerated tissue, and Gram-negative bacilli.

CASE VIII.—*Acute Hemorrhagic Pancreatitis. Bloody Fluid in the Abdominal Cavity. Pancreas enlarged; Gall-bladder and Ducts Normal to the Touch. Died.*

A man aged thirty years, a clerk, was admitted to the Rhode Island Hospital, August 2, 1909, to Dr. Hollingsworth's service. He complained of pain after eating, with occasional vomiting attacks for the past three months. Two days before admission he had a sudden sharp pain in the epigastrium with repeated vomiting of greenish material. He became very much prostrated. The bowels have moved each day. There is epigastric distention and tenderness on pressure all over the abdomen but it is greatest over the upper right rectus region. The abdomen is tympanitic on percussion. The pulse is rapid and irregular and the temperature is 99°. He has had a hernia for five years which has been irreducible for a few days. It was thought that he was suffering from a strangulated hernia.

Operation.—Dr. Hollingsworth. Cocaine anesthesia. The hernia sac was opened and found to contain omentum and a thin milky fluid; there was no strangulation. A second incision was made into the abdominal cavity in the upper right rectus region and a large quantity of dark bloody fluid was encountered. The pancreas was found enlarged, dark in color, and very adherent to the omentum. A sudden and copious hemorrhage occurred in the region of the head of the pancreas and the patient died upon the operating table. The gall-bladder and ducts appeared normal. There was no autopsy.

These cases are of interest from several standpoints. Two cases recovered of the eight cases reported. Two patients were operated upon twice. One was operated upon for acute hemorrhagic pancreatitis and one and one-half years later was again operated upon and four gallstones removed from the gall-bladder. Dr. Gile of New Hampshire reports a similar case. He operated for acute hemorrhagic pancreatitis and his patient was operated

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upon about one year later by Dr. Irish and a number of gallstones were removed.

Another case in this series was operated upon for acute hemorrhagic pancreatitis and some months later a pancreatic cyst was removed. The events were reversed in one of the cases. Thirty-two gallstones were removed but a stone was left in the common duct. The patient some months later died from acute hemorrhagic pancreatitis. We should keep in mind the close relationship between infection of the bile passages and disease of the pancreas. While we should strive to make more accurate diagnosis in lesions of the upper abdomen in obscure conditions, we should not delay but should operate early, as most of the conditions that simulate disease require surgical interference.

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DISCUSSION ON THE PAPERS OF DRS. POUCHER and KEEFE.

DR. ROBERT T. MORRIS, New York.—Mr President: Up to ten years ago I did not have a single case of pancreatitis. I have lost three or four patients from that condition during the past year. This does not mean an increase in these cases, but it casts a rather serious reflection upon my diagnostic acumen, in former years. We have come to recognize the fact that pancreatitis is one of the commonest and most serious complications of our cases of gallbladder diseases, no matter whether they are operative cases or not, and no matter whether gallstones are present ar not. We know that an ascending infection may occur along the common bile duct, and that infection does make its way against the epithelium which is supposed to keep the current moving toward the bowel continually. In the same way we may have ascending infection of the ducts of Wirsung and Santorini, and a mere swelling of the mucosa of these ducts will suffice to dam the secretion of the pancreas. Then we have the picture so well brought out by the readers of these papers. I would like to make this point in the technic: Operate early. Operate as soon as we are sure that pancreatitis is present. It is important to make drainage on both sides of the pancreas, for the reason that the vitiated secretion that is escaping is doing the damage. If we tear through the gastrocolic omentum and place a drain on that side, then approach the gastrohepatic omentum, and place a drain on that side, being careful that these two drains do not constrict the pylorous, we will find it an important point in technic, otherwise the patient will be in great distress. You must drain on both sides for the reason that on the side of the gastrohepatic omentum we have Morrison's pouch, which is a distinct separate cavity, and unless we drain Morrison's pouch at the same time that we drain through the gastrocolic omentum, we are not draining the region sufficiently, and drainage is what we must have in order to take away this dammed secretion. There are many men who do not insist upon incision of the pancreas itself. They say that great disturbance is probably due to the escape of secretion and to the damage which it produces once outside of the pancreas, but I think we should incise the pacreas to relieve the congestion of that organ just as we

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incise to relieve the congestion of other organs, and relieving congestion through incision of the pancreas will also relieve a part of the distress from which the patient suffers. Why have we overlooked these cases previously? Because we have found in our postmortem examinations that the pancreas and other structures in the vicinity were distended with serous infiltrates and the common distention of surrounding structures turned our attention away from the important infiltrated dammed pancreas. The point which I especially wish to make was the point of double drainage, incision, and inserting drainage on both sides, being careful not to constrict the pylorus with the drainage apparatus.

DR. LOUIS FRANK, Louisville.—I have enjoyed these papers very much, and I consider this a most important subject. I have had experience personally with six cases on which I have operated myself, and was associated with another practitioner in an additional case. Dr. Keefe has detailed the symptoms exactly as I have seen them, that there is nothing left to be said upon that phase of the subject, and I would only impress upon the members the profound shock that occurs in these cases. These cases have presented to me, every one of them, symptoms of upper abdominal perforation except in a more marked degree. Shoch has been the most pronouned symptom, and the shock has been prolonged, and it is a condition from which these patients do not seem to rally. I said a moment ago my own experience has been confined to seven cases. The first of these I saw in consultation and was present at the operation. It was some years ago. The condition was not recognized, and the case was looked upon as one of acute intestinal obstruction, and these cases also present many of the symptoms of acute obstruction of the intestines. This man's abdomen was opened, but nothing was found in the intestine. The so-called fat necrosis was observed in the omentum and subperitoneal tissues, and we looked upon that in our ignorance as being tuberculous in character. This patient died.

The second case was seen at a time when Iwas on the lookout for pancreatitis. It occurred in my service at the hospital. That case was also overlooked until operation was done. That individual presented marked jaundice. It was the first symptom, followed later by profound shock. This patient was operated on in profound shock. In getting into the subperitoneal fat, the condition was recognized on account of the fat necrosis that was present. No stones were found upon palpation of the gallbladder nor upon examination. Drains were placed, as Dr. Morris has described, in Morison's pouch, and the postperitoneal space was also drained, and at the autopsy a number of stones were found in the duct deep in. We have also noticed this point, as you noticed it in Dr. Keefe's paper, that no stones were felt in several of these operations, but subsequently were removed. So in this individual no stones were found at the operation,

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though the gallbladder was drained and stones were found subsequently at autopsy.

In a third case I saw, the diagnosis was at once made. This man had been treated for gallbladder disease. An incision was made on the left side of the median line, and extensive drainage instituted. He presented also the symptoms of intestinal obstruction; the bowels afterward moved, he lived for two weeks, and during this time the wound, which had been nicely healed apparently up to the point of drainage, began to slough, and at the time of death two weeks later he had emaciated forty pounds. There was an enormous eroded area extending throughout the line of incision.

In the fourth case a diagnosis was also made. This man's attack came on while riding on a street car. He had taken repeated doses of morphia and opium, or at least one of the forms of opium which he secured at the drug store to relieve the pain from which he suffered. His pain was intense. He came into the office three or four hours after the exhibition of the first symptom in profound shock. We thought he had a perforation of the stomach. A professional fried of mine saw him and we observed him until the next morning when he showed evidence of jaundice and was immediately operated on. A very small stone was removed from the common duct in this case. Sloughing took place, with a discharge of nasty pus, and involvment of the entire area of the wound with fat necrosis was evident. He died at the end of two weeks.

Case V followed ten days after an injury. This case was diagnosticated by the attending physician as a probable upper abdominal perforation. Symptoms were so marked that my experience in other cases, after a very little questioning, left no doubt as to the nature of the case. The patient was at once sent to the hospital, operated on, and died within three hours. His abdomen was found filled with bloody serum.

Case VI was in a young physician who gave a history of typhoid fever two years preceding this attack. Following a spree of two weeks' duration he began to have pain and presented himself with marked shock. His condition was overlooked, and he was allowed to go six or seven days probably fortunately for him. When seen he had a tumor beginning to the left of the median line. I operated upon him, and found typical fat necrosis. Drainage was instituted on the left side in the extraperitoneal region, followed by recovery. He, however, presented a fistula which continued to discharge for probably five months, but after restricting his diet, subsisting on a free carbohydrate diet, within forty-eight hours the sinus closed, and he has had no discharge since.

DR. CHARLES N. SMITH, Toledo, Ohio.—I have had the opportunity of operating on four of these cases of acute hemorrhagic pancreatitis, in three of which a diagnosis was previously made. In the fourth the diagnosis of peforative duodenal ulcer was

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made by mistake, and this was the only patient that died. These cases of acute hemorrhagic pancreatitis, as well as the cases of the chronic form of inflammation, are almost invariably, to be more exact, in 80 per cent. and secondary to gall tract disease, and that very fact should lead us in the presence of acute symptoms of perforation into the upper peritoneal cavity to suspect one of two conditions, either perforation of the gall-bladder or an acute hemorrhagic pancreatitis. In these cases of acute hemorrhagic pancreatitis I have found two varieties, one the fulminant variety, in which everything went to the bad rapidly. The other class of cases were more slow in their progress, and one of these I operated upon the fourth day of hemorrhage. Now, while we settled yesterday beyond controversy that we could operate on ruptured extrauterine pregnancy whenever we pleased, there is only one time to operate on fulminant cases of acute hemorrhagic pancreatitis in my opinion, and that is immediately upon seeing them. The symptoms of perforation or of hemorrhage into the pancreas are those of upper abdominal peritoneal infection of severe type. The pain is sudden, it is severe, it is paroxysmal, and in my opinion the paroxysmal pain is caused by an additional hemorrhage. In this case on which I operated upon the fourth day for various reasons which it is not necessary to state, the enlargement of the abdomen in the epigastric region was very marked from day to day, and as the patient would have attacks of pain, she complained more of distention in her abdomen immediately following that, and we could see an increase in the bulging of the abdomen within an hour following this severe pain. A peculiarity about the pulse in acute hemorrhagic pancreatitis is that it rises steadily. There is no fluctuation, no rapid pulse one hour, no slow pulse the next, but steadily rises from the moment of the onset of the symptoms until the symptoms are relieved. The temperature is of practically little significance, as it varies in my experience from considerably below normal to a rather high point. Vomiting in the acute cases has been quite marked. Bowel obstruction sometimes seems apparent, but it is not real. A good dose of a cathartic will almost invariable cause evacuation from the bowel.

As to the Cammidge reaction test and the occurrence of jaundice in these cases of acute hemorrhagic pancreatitis, while we may have time enough to make a Cammidge reaction, these cases will not live long enough to produce jaundice.

As to Cammidge's pancreatic reaction, personally it has never led me astray except in one instance, and I still have faith in it, notwithstanding we have had a contrary report concerning its value from Rochester, Minnesota.

As to the associated operations in acute hemorrhagic pancreatitis, I do not believe they are in the majority of instances advisable. The patient has enough to do to stand the operation plus the shock of her hemorrhage without any refinement of operation which can be conducted more safely at a later period.

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One point in the operation which I believe is of the greatest importance is the abundant preparation for drainage. Your drainage must be rapid and it must be free. Drainage must be done as soon as possible, and this can be accomplished only by the placing of a large quantity of gauze. Personally, I use a large rubber tube, split it, and pass it down through the gastrohepatic omentum, or into or through the gastrocolic omentum. I never place the tube as Dr. Morris suggests, but the advantage of a large rubber tube is that you can change the gauze readily and frequently without displacing the tube, and the stomach will not crowd over the incision and make it impossible to insert the gauze.

DR. JOHN F. ERDMANN, New York.—My original thesis for admission to this association contained a report of five cases of acute hemorrhagic pancreatitis. That was in 1906. Since that time I have added five more cases, and of these I will give a brief summary. Two of the cases were seen in the past two months, one seen two, and another four hours before death; these I refused to operate on the ground that operation would possibly do no good. I made a diagnosis of acute hemorrhagic pancreatitis, to the family physician and such was the condition, autopsy proving my contention. We had one case of acute hemorrhagic pancreatitis, which was not operated on, and died. Of those operated on by myself, eight of them were seen in private practice, while the others occurred in my hospital service. Of six cases of acute hemorrhagic pancreatitis, two were suppurative. In the later cases I believe the hemorrhagic condition preceded. Of the two suppurative cases, one was a physician's father, who recovered. The other was a physician's mother, who died. Of the rest of the eight cases, six recovered.

In regard to the causation of pancreatitis, I think in the last two or three years the Mayos and others have contended that it is due to a change in the mucosa of the gallbladder, and that is why we at the present time are doing less cholecystectomies than we did three or four years ago. I believe we should limit ourselves to cholecystectomy in those cases where the gallbladder mucosa is absolutely destroyed. Different cocci, such as the bacillus coli communis, staphylococci and streptococci have been found in some cases, and what Dr. Morris and Dr. Keefe have said in this regard is undoubtedly true.

As to the Cammidge reaction, in my thesis I stated that I did not think much of it from a surgical standpoint, for the reason that in the acute cases, by the time you wait for a collection of twenty-four hours of urine, which is demanded, and then take another twenty-four hours before you get the results of the analysis, forty-eight hours will have elapsed, and in these acute cases the patient is so near dead at the end of this time that he would die without the operation or with it. In my second paper in the symposium by Opie and others, I was satisfied to a considerable degree with the Cammidge reaction, but I pointed out that

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in cases of acute hemorrhagic pancreatitis the waiting process would be serious, but in the subacute cases the symptomatology might be such as to allow time to wait. Now, in my third stage of the game, in the discussion of this paper, I am frank to say that I do not care for the Cammidge reaction, if there is pancreatitis suspected I go ahead and operate with or without the reaction. Two of my cases were seen in the past nine months. In one I was particularly careful about saving all the urine for twenty-four hours previous to the operation, and it was shown by operation that he had profound fat necrosis, with a large quantity of material resembling beef broth in the abdomen. The urinary examination was made by one of our best men. It was absolutely negative as to the Cammidge reaction.

In regard to the symptomatology of acute hemorrhagic pancreatitis, I cannot add anything further than simply give you my conclusions in a paper read before the surgical society. None of the eight case I reported showed at any time any sugar in the urine.

In conclusion, I would call your attention to some of the pronounced symptoms that indicate operation—namely, marked pain at the onset; shock, profound toxemia in some of these cases, cyanosis and lividity, dyspnea, and constant severe backache, requiring large quantities of morphine for their relief.

DR. HUGO O. PANTZER, Indianapolis.—I have been delighted with the presentation of this subject by the essayists and the discussion. I have had six cases of acute hemorrhagic pancreatitis, and in the majority of these cases I have noticed what has come to me to be a sign of rather pathognomonic importance —namely, a peculiar chicken-coop odor that these patients have. In some of the cases this odor was exceedingly obtrusive, and was also observed by the friends of the patients. One case on which I operated three times was interesting as having a bearing on another point. The patient was operated upon primarily for acute localized hemorrhagic pancreatitis. On opening the gallbladder I found gallstones but no impaction of the common duct. The gallbladder contained dark green bile. The case was operated on twice since for what was evidently a pancreatitis. Each time the gallbladder was drained for several weeks which was each time followed with great relief. The pancreas showed decrease in size evidently owing to a progressive atrophy of the organ.

Dr. Keefe spoke about the pseudoobstructive intestinal paresis present in some of these cases, and of presenting a symptomatology suggestive of *acute intestinal obstruction*. Quite contrary to the doctor's experience, my patient could not be purged by any remedies given. There was upon the intestines a lull not influenced by cathartics. The vomiting, in my cases, was more in the nature of a gentle regurgitation than a violent projectile effort. The abdominal viscera throughout by aus-

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cultation were found at uncanny rest. One of my cases had a tragic ending upon the operating-table. The vomiting or regurgitation before the operation had not been bloody. But the operation was hardly begun when the patient began a copious sanguinous vomit in which he was veritably drowned.

DR. POUCHER (closing the discussion on his part).—I do not know that I have anything of further importance to add on this subject. The gentlemen who have discussed the subject have been generous with the writers of the papers, and on the whole seem to agree with the conclusions that we have arrived at. I only want to say in regard to the remarks made by Dr. Morris, with which I agree, I did not incise either one of my cases because it seemed to me that giving this secretion free drainage as soon as possible was the thing most to be desired. It was only a few days ago I opened the abdomen of a patient thinking that I probably had another case of acute pancreatitis. I found, however, that there was a very large dropsical gallbladder. The gallbladder was enlarged, very much enlarged, and very much inflamed. The tissues all around it were greatly inflamed. The omentum was thickened and very much infiltrated, and covered the entire gallbladder, and was very adherent. I removed a number of adhesions, aspirated, opened the gallbladder and drained it. Ten days later I opened the wound again for the purpose of relieving a possible constriction which I found to be a stone in the cystic duct, but much to my surprise I found a normal omentum and all the adhesions which had previously existed had disappeared, except a few narrow strips which were easily removed, and it struck me that simply opening freely into the lesser peritoneal cavity and packing well with gauze and using a large tube which Dr. Smith has suggested, and which I used in my cases, was good practice. In one case where I did not have a tube large enough, I used two and established free drainage, when this congestion of the pancreas as well as the congestion of other and surrounding parts rapidly disappeared.

DR. KEEFE (closing the discussion).—I should like to say a few words in closing this discussion. Dr. Frank called my attention just now to a matter which I regard of great importance. A number of experiments were made on animals, and the pancreatic juice was permitted to enter the peritoneal cavity. That produced no peritonitis, and the fact that the pancreas is located retroperitoneally, and toxemia occurs from absorption in that area, and not in the lesser peritoneal cavity, he suggested that when we drain the retroperitoneal space, that was of more importance than draining the lesser peritoneal cavity. We see these cases when secondary changes have taken place, and then draining of the lesser peritoneal cavity is not sufficient because the pancreas has practically sloughed into the lesser peritoneal cavity, but in the early stages, as the pancreas is located retroperitoneally, we can make a large incision in front, and go into

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the lesser peritoneal cavity, then open into the retroperitoneal space and drain freely in that position. This is not a septic process in the beginning, but only later do we have sepsis occur. In a few of these cases where we had acute hemorrhagic pancreatitis, and later where gallstones were removed, it does not follow that the gallstones were present at the time of the operation in the gallbladder or in the biliary passages. That may have occurred later, although we all know how prone we are to overlook small stones in the duct, and particularly if there has been a great deal of inflammatory trouble in the area of the biliary ducts.

I wish to thank you for your kind attention.

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TWO CASES OF PERFORATED GASTRIC ULCER.

BY

THOMAS B. NOBLE, M. D.,
Indianapolis, Ind.

THESE should be viewed as cases of peritonitis due to perforated peptic ulcers. The first is that of a man forty-five years of age. For several months he has had continuous trouble with his stomach, pain, distention, belching and vomiting being the prominent features. And all during these months he has been compelled to be very careful as to the quality and quantity of his food.

On a Wednesday afternoon a short time ago he was seized with an acute pain in the abdomen slightly above the umbilicus. Nausea followed and in the course of a little time he vomited once. The pain about the umbilicus continued and extended over the entire abdomen, which rapidly became distended. During the evening of the same day his physician was called, who suspected that he was having an attack of fermentative dyspepsia and administered a purgative. During that night and the next day he was given calomel, 4 ounces of Epsom salts, 4 1/2 ounces of castor oil, 1/2 pint of albolene, and during the second night some capsules containing croton oil. The last drug was suggested by myself over the phone, without having any definite knowledge of the pathologic conditions in the case. In this I did a great wrong; and who is the surgeon who has not done it probably many times?

I saw this case for the first time on the following Friday afternoon. He was then sitting propped up in bed, with a pinched, distressed expression. His face was bathed in cold perspiration. He was dyspneic; his pulse, weak and thready, was running at 130. The abdomen was exceedingly distended, everywhere tympanitic and very sensitive to palpation. Points of greatest tenderness were found 3 inches above umbilicus, in right

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semilunar line, and in the appendicial region. There was a marked general superficial capillary stasis, most pronounced over the abdomen. The colon had been emptied early by high enemata, but there had been no general bowel movement since the beginning of the attack. No vermicular movement could be detected by either inspection or auscultation. Auscultatory palpation revealed that which I have several times observed before, a crackling, squeaking noise, caused by inflamed and roughened coils of intestines rubbing against each other. A widespread peritonitis could be easily diagnosed, but I was very much in doubt as to the primary cause. Appendicitis, perforation of the gall-bladder, peptic ulcer, volvulus, and constricting bands of adhesions were thought of and held *sub judice.*

The gravity of the conditions was explained to the family, and the patient removed to the Methodist Hospital and prepared for immediate operation. An incision was made to the right of the umbilicus, splitting the fibers of the rectus muscle. As soon as the peritoneum was opened, there burst through a large quantity of seropus; flocculi of coagulated lymph, partially digested food, and the oils which had been given him the day before. I did not discover any of the capsules of croton oil I had suggested. The coils of intestines came bouncing out. Those of the small bowel were distended, very dark and edematous, and in many places covered by white plaques of lymph. Extension of the incision upward brought immediately into view a round hole in the anterior aspect of pylorus about 2 inches proximal to the sphincter. This opening was about 3/8 inch in diameter, had a gray necrotic border still discharging and not surrounded by adhesions. It was closed at once by mattress suture, with chromic catgut. Extending the incision downward, the intestines were entirely removed from the abdominal cavity. A coil of jejunum on the left side and another of ileum on the right side was dragged well to the side of the patient, opened, and the intestine drained of its contents. This required considerable stripping of the gut between the fingers. About 3 quarts of dark, foul-smelling fluid was removed from the bowels in this way. Openings in bowels were next closed with silk. The bowel was now completely collapsed, and it was very gratifying to see it at once change from dark, dingy, cyanotic color to a bright, pink, healthy hue. Next, gallons of warm salt solution were poured over the coils and through

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the well-opened abdominal cavity. Every nook and corner of the cavity was thoroughly washed and sponged clean with gauze. The abdomen was next closed, two drainage-tubes being introduced, one in the upper angle of the wound extending down to seat of ulcer, and the other in the lower angle to drain the pelvic cavity. A stomach lavage was now given until return water came clear. During the operation a median basilic vein was opened and 1000 c.c. salt solution was given. Patient was put to bed with better color and pulse than he had when he went on the table, and made an uneventful recovery.

The second case I saw four days after the first. A young woman nineteen years of age had been seeing her physician for stomach disorder for about two months. She, like the first patient, was taken with severe pains in the abdomen just above umbilicus. She vomited once a short time after onset, but continued to have pains, abdominal distention with rigidity, and fever. I saw her forty-eight hours later, having been called to operate for appendicitis. Her symptoms were very similar to those recorded in the former case—namely, leaky skin, rapid pulse, general cyanosis, abdominal rigidity with distention, no bowel movements, pains and tenderness in upper right abdominal quadrant. No induration or swelling, but auscultatory palpation elicited same squeaky sounds previously described. I was in this case able to make a correct diagnosis and did an immediate operation for perforation of the pylorus by peptic ulcer. Here I found the same kind of an ulcer as in the first case. The abdomen, however, did not contain food particles, and the intestines were not so much distended. I did not open and empty the bowel or flush out the abdominal cavity. After closing the hole in the stomach and carefully sponging the region clean, the abdomen was closed wit drainage. This case recovered, but did not do so well as the other. She suffered much with gas, ran a temperature, and after about ten days discharged some pus apparently from a nidus not reached by the drainage-tube.

These cases are the first and only of their kind I have been called to attend. And from what I have been able to gather by inquiry, I believe they are of so infrequent occurrence and of such serious nature as to warrant a little consideration of them here.

The pathology and symptomatology are very analogous to perforation of any hollow viscus of the abdomen. Diagnosis

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must depend upon the recognition of a demonstrable peritoneal insult as evidenced by sudden, severe pain about the umbilicus or epigastrium with focal tenderness followed by vomiting and the general symptoms of shock. Careful inquiry reveals a period of gastric disorder antecedent to the acute attack. Symptoms of acute peritonitis, more or less general in character, rapidly ensue, and it may be that they will overshadow all others at the time of observation as happened in the first case reported in this paper.

The vomiting of general peritonitis due to other causes has been continuous in my experience. But in these cases it occurred only once and that very early; that is, at the time of perforation. It was not present in either case during the progress of the peritoneal inflammation. "It takes more than one swallow to make a summer," and it takes more than two cases to establish a symptom. But if it can be shown that vomiting occurs only at or about the time of perforation, and ceases during the progress of the peritonitis which follows as contradistinct to peritonitis due to other causes, a little more will be added to elucidate the problems of diagnosis.

DISCUSSION.

DR. CHARLES L. BONIFIELD, Cincinnati.—Mr. President: I think this subject ought not to go by without discussion becaues it is certainly a very important one, and the diagnosis of these cases at an early stage is of the greatest importance. Personally my experience has been confined to two cases. One of them occurred two or three years ago. A large ulcer was diagnosed and the case did not come under my care until perforation had existed for a number of hours. I found the abdomen contaminated with all sorts of food and containing a great deal of pus, and I closed the perforation with considerable difficulty. The perforation was near and in the lesser curvature of the stomach, and the patient only lived ten or twelve hours.

The last case shows the difference in the ease with which these cases can be treated, and occurred during the last six months. This man was forty-five years of age, and was treated by Dr. Fihe, one of our best young men in the city of Cincinnati, for gastric ulcer. He had limited this man's diet, and insisted on observing the man from day to day, so that finally the patient ceased to employ him, and would rather cross the street than meet the doctor at any time. This man went to the theater one afternoon and just as he was coming out he was seized with a severe pain in the region of the stomach. He then remembered that doctor and what the doctor had told him about

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restricting his diet, and he sent for him, and Dr. Fihe made immediately a diagnosis of perforation and telephoned me to be prepared to operate as soon as possible. I went over to the hospital, we operated on him two hours from the time the perforation had occurred, and fortunately his stomach was comparatively empty, and there was very little débris in the peritoneal cavity. We closed the ulcer as rapidly as possible, put in drainage, and his recovery was absolutely uneventful. The point I wish to make is that we can save nearly all these cases if we get them early. If we recognize the symptoms, I believe it would be better to operate on some without perforation than to wait for symptoms of peritonitis and be sure of our diagnosis.

DR. JOSEPH PRICE, Philadelphia.—Perforative forms of disease of any or all of the viscera belong to a class like ectopic pregnancy and appendicitis and they belong to the calamities, and a knowledge of both pathology and of diagnosis gives us our advances and victories. We simply lose patients because we fail to act promptly, and we fail to recognize the lesions early, and an error in diagnosis should rarely be made, as the symptoms are sufficiently prominent and alarming. It is exceptional to hear a comment or an allusion to an error in diagnosis and I have questioned teachers very closely with regard to that matter without their knowing what I was aiming at. With the growth and development of hospitals in the small cities and towns, we are getting some valuable experience from the work done in these institutions, thus avoiding the shipment or transportation of patients which results so disastrously. I have recently had two cases of perforating ulcer of the stomach. The internist and the new specialist, was referred to. He is the chap, who, when he sees these patients in the midst of an attack, or an hour or so after the onset of a severe pain, sticks his ear to the stomach and listens. The last speaker prefaced his remarks by an allusion to the leakage and the discharge of the contents of the stomach into the abdominal cavity. The clinician, the diganostican, ought to recognize this while it is going on if his patient has nausea and is vomiting, and not by simply placing his ear over the stomach. Comparatively few errors are made in diagnosis in this class of cases. If you ask a good practitioner the question, Can't you remove the patient three miles, from Collegeville to Morristown, or Can't you move the patient from Chester County Poorhouse or Club, three miles to the West Chester Hospital, he wil say, "No; my patient is too far gone." With leakage and beginning peritonitis the surgeon can decide before he leaves home, may be at midnight, what the case is, the blanched face with restlessness, gasping respiration, a face as white as a pillow.

DR. J. H. CARSTENS, Detroit.—There is one case I would like to call attention to. I recall a case of perforation in which there was a large ulcer about an inch and a half long and an inch

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across. There was nothing special about the case. I sewed it up, and the patient recovered, but there was this about it: she was operated on one year before when a gastroenterostomy was done to cure gastric ulcer. Gastroenterostomy for ulcer of the stomach I think is a poor method of treatment, because it has been found that it does not do any good. If we operate at all, we should attack the stomach itself or the ulcer, and not do a gastroenterostomy.

DR. ROLAND E. SKEEL, Cleveland.—The diagnosis in these cases is not always easy as might be supposed, but patients who have perforation of a gastric ulcer have usually also been the subject of repeated attacks of localized peritonitis and have made complaint of rather severe abdominal pain previously. When perforation occurs the patient as well as the physician is led to believe that it is simply a recurrence of the old pain, so that the diagnosis is not made until several hours after perforation. I saw one man die promptly because he insisted until two or three hours before his death that his pain was nothing more or less than the dyspeptic pain from which he had suffered at intervals for years. Diagnosis of the site of the lesion producing the pain may be very difficult until after the primary shock has passed. I am not in favor of reporting cases during discussions except they are something out of the ordinary or unless they throw some light upon the subject under discussion; but in connection with the paper which Dr. Noble has read an experience of my own is somewhat illuminating as showing how a trifling accident may reflect upon the physician. An intelligent patient with a presumptive diagnosis of gastric ulcer was sent to the hospital under care of a competent internist for observation. During the night she had considerable abdominal pain but in the morning a test meal was given as had been previously orderd. The stomach tube was used without results. The symptoms continuously grew worse so that diagnosis of perforation was plain two or three hours after introduction of the tube. This perforation undoubtedly took place during the night but in the patient's mind its occurrence was directly due to the stomach tube which was passed in the morning.

In the diagnosis of abdominal disorders I believe sufficient stress is not laid on Head Zones, and in this particular case excessive cutaneous hyperaesthesia was found in two distinct areas, one corresponding with the termination of the seventh, eighth and ninth right intercostal nerves, the other low down in the left iliac fossa. At the operation which was made about ten hours after the onset of acute pain, it was found that the Head Zone in the left iliac fossa corresponded to the localized peritonitis produced by an accumulation of stomach contents in that locality; and the one above and to the right side corresponded to the inflammatory process in the immediate neighborhood of the perforation.

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These Head Zones when present are really of very great importance but their absence means nothing.

At the time the diagnosis of perforation was made the patient's blood pressure was only seventy and the operation was deferred for two or three hours when the blood pressure had risen to ninety-five and it seemed fairly safe to administer an anesthetic.

Recent authorities have gone rather largely into the question of the advisability of doing a gastroenterostomy at the time the primary operation is performed, and if I am not mistaken Dr. Deaver in his latest work on the surgery of the upper abdomen states it would be good policy to immediately perform a gastroenterostomy. While this may be true in some instances it certainly would not hold in a case of great shock in which the immediate necessity is to close the perforation and cleanse the peritoneal cavity. In the case cited above there were two perforations one already covered with omentum, the other as large as two fingers on the anterior wall of the pylorus above the pyloric ring; the induration in the stomach wall was too great to permit of approximation of the sides of the opening which was therefore covered over by the gastrohepatic omentum reinforced by the great omentum. To my surprise there was no leakage. The patient made a slow recovery and submitted to a gastroenterostomy six weeks later.

DR. NOBLE (closing the discussion).—To me these cases have illustrated a point which was not mentioned in the paper, nor brought out in the discussion, and that is, these leakages from the upper gastrointestinal tube are infinitely less virulent than corresponding analogous pathology lower down. Both of these cases were operated on more than forty-eight hours after the leakage had occurred. Had such a leak occurred from the appendix or from a typhoid ulcer, I feel very sure I would never have been able to report two recoveries, for the reason that the intestine is more virulent, as illustrated by gunshot wounds, low down than when high up.

There is another thing that has not been mentioned that I thought would be brought out in the discussion, and that is relative to the treatment of the secondary pathology. These cases of perforation, or obstruction, belong to the heroic type. We found in these cases, violently injected peritoneum everywhere, lymph flakes, sero pus, edematous intestinal walls filled with fluid contents. The operative procedure for the relief of this pathology whatever it may be, be it obstruction or a perforation, or something else, unless we take care of the secondary sequential condition that exists in the intestinal tube itself, we will lose our cases. These cases present a picture of desperation, and we are impressed with the idea of rapid work, quick to get in and quick to get out; quick to attack the obstruction, if it be such, and quick to get away, and willing sometimes to take chances of the intestinal contents rather than to devote an additional five or six minutes toward its removal. My experience has been

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that I conserve my patient's energies best if I take six or eight or ten minutes and open the intestinal tube and thoroughly evacuate it, and put my patient to bed with not only a surgically emptied abdomen, but an empty intestinal tube, and an empty stomach. These cases have a chance then to react, to recover, which they will not do if we did some rapid temporary operation, leaving the toxins in the bowel to be absorbed and to kill. This to me has been an exceedingly vital point in these cases and it has not been brought out in the discussion.

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IMPORTANCE OF PUBLIC AND PRIVATE HOSPITALS IN THE EDUCATION OF YOUNG PHYSICIANS AND NURSES, AND THE CLINICAL INSTRUCTION OF PRACTITIONERS.

BY
JOSEPH PRICE, M. D.,
Philadelphia, Pa.

THE private hospital continues to live, and I think probably in the midst of a lot of supervised general hospitals the institution is quite as important, from an educational point of view, as it was in its early history. I regard the private hospital as largely responsible for the important specialties, and I value it most highly for the great work it has done along these lines. I insist that in educational centers, like New York, Boston, Baltimore, Philadelphia, Chicago, and New Orleans, the specialties should be advanced. If it is necessary to send your wife or child to be operated upon it is acknowledged that the best is not too good, and you want the ablest and the most refined specialist whose services can be obtained. I think we should aim in our work at that refinement that has been acquired in the treatment of diseases of the eye or in any of the specialties we have under consideration here.

Private hospitals had their origin in this country, and they gave us the specialties. They also gave us the nursing profession, another specialty which we esteem and value very highly. Our advances are largely due to the assistance and support we have had from the nursing specialty. All of us have seen recent allusions to the death of that queen of nurses, Florence Nightingale, which tell the whole story. With the decimation of wounded and afflicted in the English and allied forces in the crimea, the mortality was reduced under her administration from 50 or more per cent. to 2 per cent., and the pest-houses were soon cleaned up. And this little queen of nurses met the prejudice of all classes for a time against her progressive humane work. She met an officer and asked him to open number six or seven. He refused and she politely told him he would save her the trouble of breaking the doors. But

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it was a curious and interesting thing that this refined military commander, recognized not only the genius but the woman that possessed all these redeeming attributes of women. When he learned that she was ill he called for his orderly and horse and drove to her cabin, tapped on the door, and was informed by a Sister of Mercy that Florence Nightingale was ill with fever, and he could not see her. She recognized the voice of this military commander, tapped on the wall, told him that she was sick with fever, and that it would be dangerous for him to be admitted. The military commander said, "Madam, I fear nothing."

From this small beginning grew the private institution for that class of women that were going to do the work of mercy, not the scientific work, that came to her helpers. It was along these lines, in following her early efforts, we have the origin of Stone's work, and McDowell's work, who made a private hospital of his home, where his early work was very successful. It was free from sepsis, free from abscesses and the sequelæ of surgery which are so common now, and which give us what I have termed surgical junk.

It was precisely the early work of Sims with his private hospital, a little chicken-house, or wooden shed, or wagon shop, that enabled him to do so much, and he made those successful efforts after the profession had deserted him. If we will study his early trials and tribulations and the object lessons given by Sims in the direction of development of specialties, making trips to New York, New Orleans and Baltimore, we will find them very interesting reading. Sims made his way to New York and to Paris; but it was through Jefferson College, Philadelphia, the Gross School, the Pancoast School, that so many geniuses, so many specialists, received their education. Battey went South and gave us early surgery for obscure diseases of the female reproductive organs, for which he received much unjust censure. That simply meant ignorance on the part of the profession.

If you read carefully you will recognize that Battey's work was honest and done with pure motives. He established a private hospital and educated the members of his profession. Sims did the same, and so did McDowell and Hunter McGuire. Hunter McGuire not only created a private hospital and a new school for nurses, thus giving the people in the South a nursing profession, but he reeducated his profession. He created

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schools and specialists in large numbers. No man has lived who made more good surgeons than Hunter McGuire. The doors of his private hospital were always open; you could enter without ringing or knocking. I rejoice that he has a son who is doing precisely the refinement of surgery that the father had practised so successfully. His mantle has fallen upon worthy shoulders.

There has been a prejudice against private hospitals, but they have never suffered from that warfare and condemnation and irregularity that have characterized many other institutions, simply because they have been managed by a class of men far removed from the possibility of irregular practices. Exceptionally do the private hospitals publish reports of any character of the work done in them. If I were to publish a report of my last year's work, giving the number of cases of ectopic pregnancy and the cases of suppurative forms of ovarian disease, the number of cases in which the appendix was removed, and the cases of peritonitis treated, the members of my profession would say at once, "What is wrong with Price?" I have never published a report of any character, and but few private hospitals in America have ever done so.

Beginning with the pioneers in the specialties, they did much work and created specialists. The nursing profession is doing much work at home and abroad; it is doing a great missionary work through Japan and China, through India and Africa, and I sometimes think that we are perfectly blind to the enormity of the missionary work which the members of the nursing profession are trying to do at home and abroad. This country is filled with a band of advanced thinkers and workers among the nursing profession, and they carry their counsel and good work into all the provinces. Many of these young women in acting as pupil nurses receive from ten to twelve dollars a month; they have labored night and day for three years before graduation, and their records of usefulness, their prominence, their great work of mercy have been larger than mine. In short, I would like to share more of their deserved prominence. Remember, I am talking about pupil nurses now.

I have alluded to the work of Battey and Sims and Hunter McGuire, and I probably have overlooked a few of equal prominence, but it will be impossible for me to mention all of them in this short talk. That past master, Emmet, continued to perfect the work of Sims with his ingenious operations for the repair of all

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lesions incident to parturition, and these lesions are numerous and important and should be repaired. About a year ago I repaired some lesions, due to the premature use of high forceps, in the wife of a Harvard graduate and president of a college. He was a handsome fellow and she a lovely little woman. She was badly mutilated, with huge lips everted, and the lower end of the uterus larger than the upper end. I repaired her cervix, after the ingenious operation devised by Emmet for the repair of such lesion and then made a new pelvic floor for her. I promised her conception. I had many delightful chats with that intelligent little woman. I told her I wanted her to be a mother, and a few days ago she sent me a dear little note telling me that my hopes were realized.

And I rejoice that such a man as Emmet lived; he has been the means of arresting race suicide. But there is no one present who could not relate experiences of this character. Race suicide is due in many instances to pathological conditions. We have a great variety of race suicides. Social evils and vices are at the bottom of race suicide. It is difficult, if not impossible, to stop these evils. But we have made wonderful progress along these lines through the growth and development of our private hospitals and specialties. When I first talked about the social evils, after I read the paper of Noeggerath on the Latency of Gonorrhea which he wrote in 1876, at the beginning of our scientific progress, I met with a good deal of opposition on account of the views I then advanced. I was even asked to leave Philadelphia, whereas now it is simply impossible for me to accept all the invitations I receive to deliver lectures on the subject, even from the church pulpit with a big Bible to lean upon.

Following the work of these early pioneers, we had them all—Emmet, Gaillard Thomas, Paul F. Munde, Goodell, and the second school of great specialists, which gave us men like Clark, Kelly, Deaver, and a great number of advanced specialists such as I see before me—all serving our schools and hospitals throughout this country. Later appeared the specialists in the Southwest, the Middle West, and the East. These private hospitals serve as landmarks and as teaching institutions. They have always been wide open and, when running at their best, have been made more attractive and interesting than society meetings. Two years ago I happened to have had an abundance of clinical material during the meeting of the American Medical Association

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at Atlantic City. The good practitioners from around the country paid me the compliment of coming to see what I was doing. They asked me many questions about the patients I was operating on, and many of them were so intensely interested in the surgical work and what they saw that they did not even attend the meeting of the American Medical Association. These practitioners get in private hospitals what they cannot get by attending meetings of the American Medical Association or in general hospitals. One distinguished practitioner, who has done so much theoretically and practically for his profession, was at my clinic and told me he had closed his private hospital. I asked him what was the trouble and he said he had been speculating in stocks.

I am sure we are all gratified to see that many of our general hospitals have been remodeled and that they are no longer pest-houses. It was the private hospital that cleaned up the pest-houses. Now, it would be an excellent thing if we could clean up medical colleges and make them fit for students to sit in. The average medical college is a dirty place, too dirty even for poultry or animals. In my private hospital doors are wide open. Practitioners can enter the operating-room at any time, and they come in at all hours without interfering with my surgical work. Some time ago there was a controversy between the ministers and doctors as to whether hospitals should be open to practitioners of medicine. I was asked to serve on the staff of one of them and I said that I would not serve on the staff of any hospital that was closed to my professional brethren; neither would I permit the trustees of such a hospital to tell we when I should do an operation or how I should do it. I find that some of the church hospitals throughout the country are closed to the profession, and I am ashamed that there are still brother practitioners who will serve such institutions. They ought to resign unless they can use their influence with success in reforming such hospitals.

I have presented simply the educational side of our private hospitals, and I know from a study of these institutions at home they have done great work. I find men distributed over Kansas, Texas, and other portions of the South and West who have had only meager opportunities, but who, after witnessing a few operations, have gone home with new and fresh knowledge and have done splendid surgical work unless, perchance, they are members of the Ananias Club. At all events, they have written me letters which I prize, and it is difficult to deceive about one's work

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nowadays, because there are too many men watching and seeing what is being done. They talk about it, and if you lose a patient they know it in California in an hour or so, the news being transmitted by wireless.

I find that same condition of affairs in associating with members of my profession from abroad, and nothing gives me more pleasure than to allude to the kindness of our foreign specialists. I still go to all of their clinics whenever I have an opportunity to do so. I lunch with them, dine with them, travel with them, and I have received every kindness and attention possible in witnessing their operations. Men like Messieurs Keith, Tait, and Knowsley Thornton, and the old school of specialists, deserve monuments erected to their memories, because they have distributed throughout the the provinces of England a class of specialists that could not be developed in any other way. The general hospitals are not giving us the class of men and specialists that it should. There is something of which they are afraid. They have a peculiar self-consciousness. I asked Deaver not long ago why it is we are not making more surgeons, and he replied, "Damn it, they are too busy playing poker."

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TORSION OF THE GREAT OMENTUM.[1]

BY
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A REPORT of the following case of torsion of the great omentum seems warranted, not only because of its being an addition to the few cases already noted in the literature, but also by reason of its apparently unusual consequences.

A. H., age thirty-four, American, of German parentage, by occupation a fisherman, a large, rather fleshy and very muscular man, weighing perhaps 210 or 220 pounds, was referred to me in January 1910 by Dr. Montgomery of Port Clinton, Ohio. The patient gave a history of having had a number of attacks during the preceding few weeks, of very severe abdominal pain, so severe, indeed, that he greatly dreaded their recurrence and was eagerly willing to submit to any operation that gave him promise of relief. Vomiting had sometimes accompanied the attacks, and the bowels would move freely and with little difficulty but with no relief of the pain. Morphine in large doses would alone control it. The patient had had since a child a left-sided inguinal hernia, with an undescended testicle on that side, and it was to this condition his pain was attributed by Dr. Montgomery. At no time had the intestine been incarcerated.

It was for repair of the hernia and operation for the undescended testicle that the patient was sent to me. He referred his pain to the epigastric and umbilical spaces, and described it as being very diffuse over these regions, but at the time of my examination he was free from it, though said he dreaded exceedingly its recurrence and that it was liable to come on at any time. The taking of food, as nearly as I could ascertain, did not determine the onset of an attack, though theoretically it should have done so. Percussion and palpation of the abdominal wall gave no information as to the origin of the pain he described, no doubt on account of the thick fat and strong and rigid muscles, and the diagnosis made by Dr. Montgomery, that it was due in some way to the undescended testicle in conjunction with a possible recurrent epiplocele, in the absence of anything else to which it might be attributed, seemed most probably correct.

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I operated January 28, 1910. The hernial sac was readily loosened, and attached to it at the entrance to the internal ring the testicle was found, nearly normal in size, but no portion of omentum came into view nor came within reach of the finger. With some trouble the testicle was loosened from its attachments and brought into the scrotum and the inguinal canal closed. During the following night his nurse called me up stating the patient was suffering intensely, the pain being so severe that he seemed unable to endure it. I ordered a rather large dose of aspirin, and this I think gave him some relief. I saw him early in the morning and, though his pulse and temperature at this time were about normal, his features seemed pinched as though suffering greatly, and he was exceedingly restless. He had been a man of somewhat intemperate habits, though he assured me that for some time he had drunk nothing at all. I now erroneously attributed his restlessness to alcoholism and prescribed accordingly.

I saw him again toward evening and found his pulse had now increased to more than a hundred, with all the severe symptoms of the morning intensified. He seemed a very sick man, was restless, and complained of intolerable pain which was most accentuated about the umbilicus, and was perspiring profusely. His abdomen seemed slightly tympanitic, and I ordered a turpentine enema after which his bowels moved freely, but with no betterment of the symptoms. Morphine was now freely administered and, though his pain was somewhat controlled, his symptoms steadily became worse and, at the suggestion of one of my assistants, I ordered the stomach irrigated whereupon, to the surprise of us all, an enormous quantity of blood gushed out through the tube as soon as it was passed.

The man now vomited for the first time since the operation, and the vomitus was composed of a still larger quantity of blood. The severe constitutional symptoms were now accounted for. He was suffering, as we supposed, from a gastric hemorrhage; but the pain was yet a mystery. The easy movement of the bowels and the absence to this time of vomiting excluded intestinal obstruction, and there was no evidence of peritonitis. The patient's condition steadily became worse in spite of all we could do, with no cessation of gastric hemorrhage, and he died within fifty hours from the time of the operation.

Postmortem two hours after death revealed the liver, kidneys, and pancreas apparently normal, but the stomach and transverse

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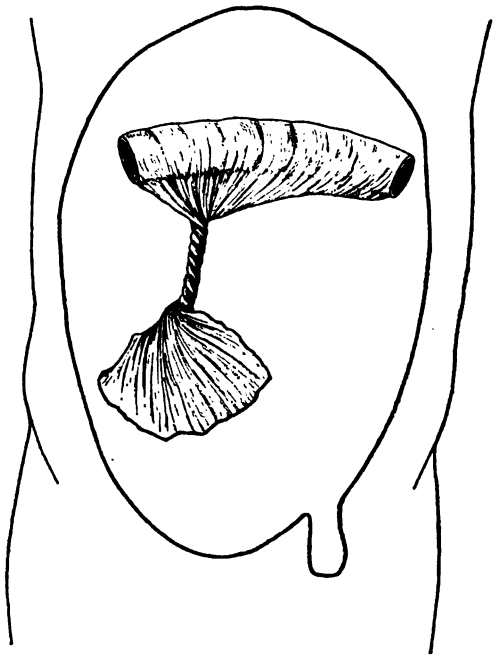
colon were filled to distention with blood. A small partially healed gastric ulcer was found near the pylorus but gave no evidence of having been the seat of the hemorrhage. The great omentum lay upon the right side of the abdominal cavity at a very considerable distance from the repaired hernia. It was not adherent at any point, but was twisted as closely as possible to the transverse colon, the twisted portion being about the size of a finger.



It did not occur to me to count the number of rotations the omentum had made upon itself until I had partly untwisted it, but from this time on I counted five, and I judge there had been at least five more, making ten in all. The bloodvessels between the twist and colon, though very short, were enormously distended as were the gastrocolic vessels. The omentum below the twist was large in size and was almost entirely gangrenous.

Death had occurred primarily from the omental twist, but directly from the gastric and colonic hemorrhage. I am convinced the small gastric ulcer referred to above was not responsible for the hemorrhage at all.

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In a somewhat cursory review of the cases recorded in the literature, I have found none where hemorrhage was observed as in this instance. In consideration of the phenomena of this case, two or three pertinent queries arise, which can probably be answered only by conjecture. What was there about the operation that would determine, just following it, the increased and fatal tightness of the twist? Why did it not occur at an earlier or later date? A plausible answer may be found.

When we consider the multiple duties of the omentum and remember that one of them is to make use of its powers of migration from one part of the abdomen to another for the purpose of protection at points of trauma and inflammation, could it not well be that, in its effort to reach the point of the operation on the opposite side of the abdomen, the fatal twist had occurred? Again, why should a fatal or, in fact, any hemorrhage occur as a result of such twist? If we grant, as I think we must, that the hemorrhage was a result of the twist in this case, again a plausible answer would be that it was capillary and a natural result of the enormous overdistention of the omental bloodvessels, the blood demanding an exit and finding it into the stomach and colon?

With the present knowledge we possess of the diagnosis of torsion of the great omentum, would or could a diagnosis have been made prior to operation? I believe not. Had this abdomen been reopened at the onset of the severe symptoms and the omentum amputated at the point of twist (for untwisting would have been impracticable) would there have been a likelihood of the cessation of the gastric and colonic hemorrhage, or would the removal of so large a portion of the omentum have been followed by recovery? I believe that both of these queries may be answered in the negative. I see no reason why amputation would have controlled the hemorrhage, and when we consider the importance from a physiological stand-point of the great omentum I am sure Fuller(5) is correct when he says, "Its uses cannot with safety be curtailed or compromised."

The etiology of torsion of the omentum has not as yet been entirely cleared up, though in most instances it seems sufficiently apparent. Baldwin(2) says, "There seems to be no question as to the causative connection between the omental mass and hernia" and that "congenital malformation of the omentum may be a factor."

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Richardson(11) says, "The conditions necessary for the production of an omental torsion are, therefore, the formation of a mass of matted omentum at its free extremity or the formation of a second fixed point of adhesion of the free end to some other structures."

Griffith(4) mentions, "The attachment of the great omentum to the primary peritoneum over the right kidney, so forming a point of adhesion and torsion."

W. H. Luckett(7) says, "The structure of the omentum has for its chief framework, its vessels, long thin arteries that come off, for the most part, from the gastroepiploic arteries at the great curvature of the stomach, running downward and then upward to anastomose with the arteries of the colon. Enlarged full veins have been characteristic of the specimens of torsion of the omentum. Now these veins increase in size and length more rapidly in inflammation than the arteries, and would have a tendency to wrap around the latter and carry the loose mesothelium and so may perhaps be the chief factor in producting torsion." In the case reported no doubt the hernia was the original cause of the torsion, though no evidence to indicate this was found at the postmortem.

The paucity of diagnostic symptoms and signs we possess pointing to this condition is sufficiently apparent when we note that, of the cases reported, now more than seventy, the diagnosis was made but once prior to operation.(1) What we have are about as follows: The presence in most instances(1) (90 per cent.) of an abdominal hernia, including inguinal, femoral, ventral, and umbilical, though most often a left-sided inguinal hernia. The fact of there being an undescended testicle should also be considered. The patients are generally in middle life, most frequently a male, in the proportion of 17 to 36(1). The attack is first noticed by an onset of severe abdominal pain, not infrequently in the right hypochondriac space, and often supposed to be appendicitis, though the pulse and temperature do not rise so rapidly as in severe attacks of this disease, while tenderness and dullness cover a much wider area. Vomiting occurs in but 50 per cent. of cases, constipation is rare, though of the cases reported in five the bowels failed to act. Distention of the abdomen is not usually noticed, but occasionally does happen. The symptoms are sometimes taken for those of intestinal obstruction, but should not be confounded with them, for the bowels generally act with little difficulty and there is usually lack of

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severe vomiting. The condition may be suspected when, after movement of the bowels, under such circumstances, there is no cessation of the pain.

The tumor is sometimes felt with its surface irregular and its borders not well defined, and sometimes seems to be continuous upward from a hernial opening. Ascites has been noted. In the light of the case here reported, gastric and colonic hemorrhage in conjunction with severe abdominal pain, not accounted for, must be considered a diagnostic sign.

The prognosis when the case is left to itself must depend largely on the amount of omentum involved, though other factors may obviously enter into it, and I know as yet of no estimate of the death rate having been made in this class. The prognosis for cases operated is as yet not very accurately determined, but the death rate has been estimated(1) to be about 13 per cent.—a death rate sufficiently high to warrant a more careful study of the diagnosis and treatment of the condition than as yet has been given it; and when diagnosis prior to operation has been made possible, I am convinced that the observation made by Richardson(11) is correct, namely, that "torsion of the omentum will be found to be more common than is now supposed"; and I may add that it is not improbable that many of the obscure abdominal pains, now often attributed to other conditions, are caused by it.

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PELVIC REFLEXES.

BY
ROBERT T. MORRIS, M. D.,
New York.

I SHALL occupy but a few minutes in outlining a subject which I think still needs attention. Pelvic reflexes are afferent and efferent. We do not always distinguish between the two. It is very important that we should so distinguish. When I was a student there were certain questions in gynecology, then and before, which included this question, "shall the doctor support the perineum or shall the perineum support the doctor?" At the present moment we have arrived at the stage where it is a question if pelvic reflexes shall support the surgeon any longer; whether this phase of surgery is to be set aside by our new knowledge, and if we are to take up lines of cleavage which have been opened to us recently, but which we do not recognize very well as yet.

In a certain proportion of our patients with pelvic reflexes we find the neurotic habit. These patients are neurasthenics. If we take out one ovary for pelvic pain in this class of patients the patient is just as badly off as before the operation. If we remove the other ovary, the patient is just as badly off as before, and if we take out the appendix—it has been the custom to remove everything that was not nailed down—it is the practice that has brought opprobrium upon surgery because we have not been sufficiently acute in making correct diagnoses.

These neurotic patients must be dealt with by the surgeon with a great deal of intelligence. They represent a class calling for surgery sometimes; they represent a class calling for the clergy sometimes; they visit the clergy for sympathy and have driven a number of good clergymen out of religion into the real estate business. These patients crave surgery. But beware of a lot of these patients with pelvic pains, with "ovarian and tubal trouble," with neuralgic pains of the neurotic or neurasthenic type.

Other characteristics go with that condition. First, commonly will be found a tendency to a slender figure. Next, there is a

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tendency to carry various stigmata common to this class of patients. There are errors of refraction often. All these things lead us up to the second step. Now then, if we are dealing with the second class of patients, the neurathenic patients, who have marked errors of refraction with pelvic pain and pelvic distress, how are we going to handle them? If we relieve the muscle imbalance and the error of refraction, are we going to hold the patient? Yes, and no! In some of these neurotic patients that muscle imbalance and the errors of refraction are just enough to precipitate the symptoms. They are not causative of disease. They are not causative directly of a morbid process, but they stand in the relation of precipitating factors, and if we relieve the precipitating factor or factors which upset the patient from time to time we will relieve that patient very much of the symptoms which are making demonstration in the pelvis. More often these symptoms may be referred to the stomach. These patients often are known as dyspeptics, and we all remember in our books the picture that is given of the dyspeptic; and this is so very often a neurasthenic inheritance, so to speak. Perhaps these errors of refraction, perhaps the muscle imbalance, and other symptoms are demonstrated through the semilunar ganglia.

In many of these patients the demonstration is in the pelvis. They go the rounds of the medical profession. They go from one doctor to another, they are the subjects of eternal tinkering by the gynecologist, and nothing is accomplished. This, in brief, introduces the question of afferent reflexes, of reflexes from a distance into the pelvis, disturbances in the pelvis, manifesting themselves there with a real cause or causes, or causative factors at a distance.

From the other side we have the efferent group. We have, for instance, a group of disturbances proceeding from a scar of the cervix, and we are going to determine whether we are to operate in a case of reflex dyspepsia with a torn cervix. Very many patients have torn cervices. Most women who have borne children have torn cervices. But does the torn cervix require an operation? Do we do the right thing if we operate simply because we find tears and scars? No. We are not to operate in such cases unless we have a definite reason for doing so. The Emmet sign is one of great consequence. If you press on a scar of the cervix with your finger-nail or with the sharp point of a retractor, and bring out instantly that reflex, that

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case is one which requires an operation for reflex disturbance. If you press on the scar and the patient does not know it, or if you press on another scar and the patient does not know it, do not operate on that case, no matter how much the cervix is torn, for relieving the reflex disturbance. You may operate, if you please, for a tear which evidently requires repair on general mechanical principles, but not for the object of stopping an efferent reflex.

In another class of patients we find irritation in the pelvic region proceeding from a fibroid degeneration of the appendix. How are we to know in a certain case whether irritation or efferent reflex proceeds from the fibroid appendix or from the scar in the cervix? With a scar in the cervix both groups of lumbar ganglia are hypersensitive to pressure. With the appendix the right lumbar ganglia alone are hypersensitive. Observe the rule that an efferent pelvic reflex may frequently be traced to its source by the testimony given by the patient of the relative degrees of tenderness of the lumbar ganglia.

I do not wish to go into an elaborate discussion of this subject this afternoon excepting to say that the time has come when we must distinguish between afferent and efferent pelvic reflexes; we must stop ill-advised operating upon neurasthenic patients with symptoms in the pelvis, although we must believe that it is worth while to remove the precipitating peripheral irritation in a certain proportion of cases in which it is not a causative factor of the pelvic disturbance.

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SECONDARY REPAIR OF COMPLETE PERINEAL LACERATION; ITS TECHNIC AND RESULTS.[1]

BY
EDWARD J. ILL, M. D.,
Newark, N. J.

(With six illustrations.)

IT has been my experience to learn that operations for complete lacerations of the perineum are not successful in a goodly proportion of cases. A number of my friends who did me the honor to witness the operation at my hands have told me of the many failures which they know of. A perusal of my work shows a remarkable and uniform success. My first operation after the method to be detailed was done on February 1, 1891. But one case was noted as improved on her dismissal since retention power was doubtful. The patient has since been seen and perfect retention power was the ultimate result.

The case of longest standing was a little over twenty years. The operation in her case was done fourteen years ago at the age of sixty years and she remains perfectly well to-day. The case of the shortest standing was five months. The operation should not be done earlier, and never until all tissue is soft and pliable. Altogether there were fifty-six cases. Twenty-six cases were complicated by other operations. Thus there were two Adams-Alexander, three Gilliams, and one for vesicovaginal fistula operation.

I am not telling you this to boast but to inform you of the excellent results attainable. Many operations for the relief of this distressing injury has been advised since Dieffenbach, the great German surgeon of nearly one hundred years ago, first described one. It is to Emmet that we owe an understanding of the cardinal principles leading to success—namely, the location and search of the sphincter muscle and its neat approximation. Most operations have the fault of being complicated either by the removal of normal tissue, both skin and mucous membrane, or the burial of unabsorbable or slowly absorbable suture material.

Tait in 1881 first described a crude operation which was

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successful in a fair proportion of cases. Sänger described Tait's operation in 1887, and in a personal communication at the time of my visit to his clinic in 1894 I learned that a large majority of his cases resulted in cure, though the total number barely exceeded a dozen. Sänger made some important and valuable additions to the Tait operation. It was this Tait-Sänger operation which appealed to me mostly and which I have done for nineteen years with such improvements as to attain the result already spoken of. It is an operation which I delight to do. There is no plastic operation which must be done with more

FIG. 1..

accuracy and results in greater relief to a patient, unless it be a vesicovaginal fistula closure.

The operation is essentially a flap-splitting operation and can be divided into six distinct steps:

1. The incisions,	Fig. 1.
2. The flap splitting,	Fig. 1, 2 and 3.
3. The suture of the rectum,	Fig. 4.
4. The suture of the perineum,	Fig. 5.
5. The suture of the vagina,	
6. Twisting of perineal sutures,	Fig. 6.

It will hardly be necessary to say that careful attention to the bowels and a diet as free from residue as possible for two days

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before the operation, thorough aseptic conditions just before, during, and after the operation as well as a most careful nursing are essential to success. May I say that I never use a sponge or wipe during the operation for fear of rubbing septic discharges from the rectum into the wound, but keep the wound clear of blood by constant irrigation! May I also say that the finger never touches wounded tissue nor the rectum! All handling of tissue must be done by sterile instruments. If perchance the rectal mucous membrane is touched with tissue forceps they are immediately discarded for sterile ones.

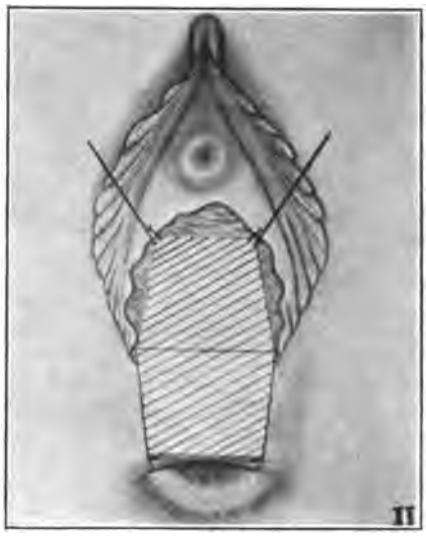

FIG. 2.

The Incision.—This is made by following distinct landmarks as shown in the drawing. The incision takes on an H-shape with the lower upright bars very short and slightly curved inward. The lateral incision begins at the location of the most posterior caruncle remaining from the hymen. If perchance they are entirely obliterated the incision should begin a little to the outward and behind the orifice of Bartholin's gland. It is continued downward and backward and just outside of and behind the dimple which indicates the torn sphincter.

The cross-bar of the H is carried exactly across at the junction mucous membrane of rectum and vagina and reaches each upright bar just anterior to the dimple of the retracted sphincter.

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A wound of the mucous membrane of the rectum at any point is avoided. All this can best be done with a very sharp, short-bladed knife when the tissue is put on the stretch by assistants on each side, and that in a few moments of time.

The Flap Splitting.—This is now conducted by grasping the corner of one upper angle and with scissors trimming up as high on the vagina as is indicated by the retracted levator ani. The other upper side is treated likewise. Now the very important denudation of the sphincter ends is accomplished by grasping the lower corner of each side and cutting downward and back-

FIG. 3.

ward, making a comparatively thin flap. I am always anxious to have free bleeding, as it insures good union. No tissue is removed unless it looks damaged from great thinness of the flap. This commonly occurs at the edge of the wound. The result of all this is a large wound with an irregular square outline.

The Third Step.—This consists in suture of the rectal mucous membrane, and for it the very finest plain catgut on a fine slightly curved needle should be used. The suture begins exactly in the middle of the posterior wound and never touches the mucous membrane of the rectum. It is entirely buried in the raw surface, each end of the suture being threaded into the needle with which a double line of suture is made. The last

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stitch of each side comes out in the skin just inside and behind the sphincter and is tied outside. Every stitch is taken very superficially. I use a very fine suture that it may absorb in three or four days, which very effectually keeps any rectal discharges from the wound.

The Suture of the Perineum.—This constitutes the next step, for which I prefer to use a very pliable silver wire made of as pure silver as can be obtained, which should be well annealed. The suture may be taken by a curved round needle or, as I prefer, a Crofford needle. They should all enter the skin just at

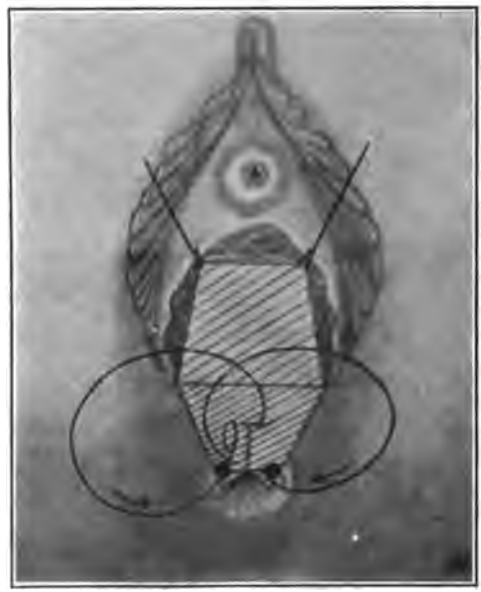

FIG. 4.

the border of the wound so that no skin will be drawn into the wound. The first suture is passed just within the curve of the sphincter; the second, through the sphincter itself; and the third just anterior to the sphincter. Each suture takes a sweeping curve so that the tissue will not be puckered, but rather spread out when the sutures are tightened. The sutures are now continued in the same way, taking wide sweeps up as high as the beginning of the upright bars of the incision H. The sutures will rarely appear in the wound.

The Fifth Step.—The fifth step of the operation consists in

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suturing the vagina. A fair-sized plain catgut should be used. The sutures must start at the middle of the anterior part of the flap formed by the anterior incision of the cross-bar of the H. It should be a continuous suture. This will insure an elevation of this flap into the vagina. This suture is continued for the present to A in figure 5. Now the silver wire is twisted down with the greatest care, shouldering the strands and holding them horizontally with a tenaculum.

Great exactness in the coaptation of the wound can and should be secured, and with the least tension. The twisting

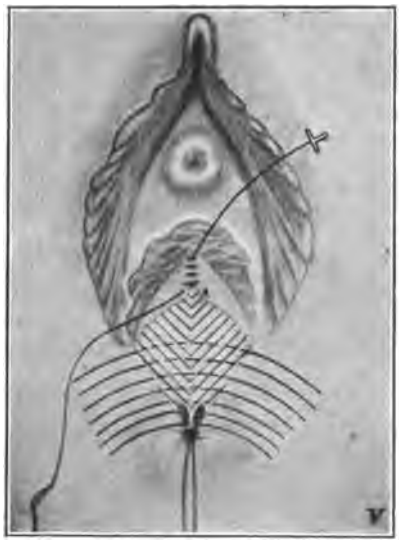

FIG. 5.

of the suture begins at the new anal orifice and care is exercised to see that the ends of the sphincter come together without tension and without drawing a flap of the skin between them. The suture of the vagina is now continued from the new fourchet down the perineum and tied an inch above the new anal orifice.

The silver wires are cut to about 3 inches in length and held together by a piece of fine rubber tubing. The operation is now finished. The sutures are cut on the ninth day and removed the next day. I have gone to some length in describing the operation. It is easier than the lengthy description makes it appear and consumes shorter time.

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My talk would not be finished should I neglect to say something about the after-treatment. A good nurse is quite essential. The bowels should be moved by a saline in forty-eight hours and the movements preceded by a sweet-oil injection. During the act of defecation I always direct the nurse to turn the patient on her left side and make pressure toward the new perineum with her left hand while the right hand carefully opens the anus. After the first movement the bowels are moved every second day by any means best suiting the patient. Thorough move-

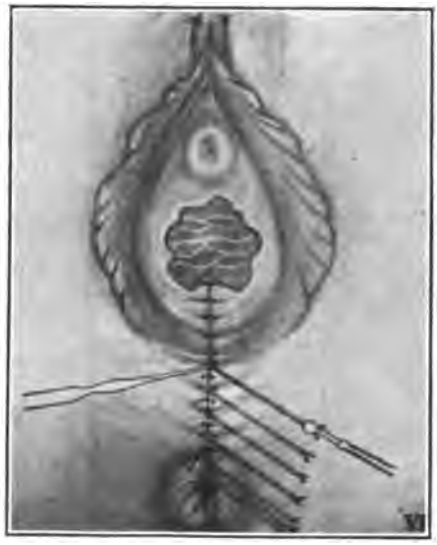

FIG. 6.

ments should be insisted upon. Urination should be normal and usually is so. I would rather have the patient sit up on a commode than be catheterized. The diet, during the first week, should consist of such food as will leave little residue.

The patient gets up on the eighteenth day and is discharged as soon as she feels able to go. If the operation is thoroughly successful she should be well aware of her retention power about the time the sutures are removed, or immediately afterward. We instruct the patient to tell us when she is first aware of her ability to retain gas. This is our criterion.

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DISCUSSION.

DR. HERMAN E. HAYD, Buffalo.—Mr President: This is a very important subject which Dr. Ill has brought to our attention this afternoon, because it represents one of the most distressing conditions that women suffer from. It is quite a difficult matter to discuss an operation simply after hearing the author read a paper upon it, but, as I understand it, this operation is a practical one, and it is really the operation we all do; that is, to utilize the ordinary flap-splitting operation of Tait, loosen thoroughly the tissues of the vagina—the deeper structures, levator ani, and the perineal pelvic fascia—and then carefully bring together similar structures. It does not matter, in my judgment, whether you leave the vagina open until the end, or whether you close the vagina first and the perineum last. The important thing is to bring similar structures together, and bring them together in a way the rupture took place—namely, from above downward. Now, this operation which Dr. Ill is advocating in these cases is entirely different from the one we do for complete rupture of the perineum. In the ordinary rupture, which is so common and which is an incomplete one, not through the sphincter ani, we have a marked rectocele. In complete ruptures of the perineum we do not have, or very seldom have, rectocele. The excess of tissue which exists in the incomplete rupture and which permits of rectocele must be removed, because there is a big, flabby vagina. But in complete ruptures, there is no rectocle, and therefore there is no necessity to do a posterior colporrhaphy. Whatever Dr. Ill does I always approve of, because I have watched his work for the last fifteen years, and I think we all agree that there is no member in this Association who has done more good for the Society than Dr. Ill. I feel he is a little bit too anxious, so far as the necessity of great caution in the case of buried sutures. If, with a gloved finger in the rectum, you delineate the structures and your assistant, after you have passed the ligatures, ties them, there can be no danger of any infection; consequently, there is no danger in using a buried suture. For that reason the operation which I do, and which I have done a great many times, and am satisfied with, is to bring all structures together, each in its own layer, and I do not care how much catgut is buried in the tissues, provided it does not get infected before it is buried. The rsults are universally good.

DR. MAURICE I. ROSENTHAL, Fort Wayne.—There is only one difference between these cases of complete laceration and incomplete laceration, so far as repair is concerned, and that is soiling from the rectum which prevents union, and unless union is good by first intention you get no result. I have done an operation which is original with myself, having begun it ten years ago, and I have since noticed that it has been done by other operators. This operation in principle is just the same as the operation which has just been demonstrated, with the exception

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that I utilize a flap to prevent soiling from the rectum, and when you prevent that you have reduced this complete tear into one of second degree. In other words, instead of resecting back a flap, as the doctor has done, I go to the inside of the vagina and make use of a flap, resecting forward and bringing the flap up in this manner (illustrating), utilizing this flap for the purpose of preventing soiling from the rectum. When you bring the flap back in this manner you expose the ends of the sphincter; you can see them, and with a little traction of the rectum you can see that dimple in here at the edge of the denuded surface. With a piece of catgut, No. 2 chromic gut one or two stitches, two usually, will unite the sphincter; then bring together the structures as in an ordinary perineorrhaphy, leaving here a denuded space on the cutaneous surface of the perineum. You then have a picture like this (indicating). Now raise the flap up, the sphincter is drawn together by the subcutaneous stitch in the center. Lying on the perineum, your stitches here (indicating), you now have what was vaginal mucosa. The rectum is located away from the stitches. The sphincteric stitch is absolutely subcutaneous and submucous, covered as it is by the unbroken mucosa of the recum and that brought forward from the vagina. It is a difficult operation made easy, and if you do the operation in this way, have the patient's bowels move daily after the next day, and otherwise simply keep these patients clean, you will get healing by first intention and an excellent result.

DR. H. W. LONGYEAR, Detroit.—It is interesting to consider the evolution of this operation. The essayist has told us that he learned it from Mr. Tait—a source from which I learned also to do the same operation. But Mr. Tait did not do it the way Dr. Ill does, nor as any of us would do is now. It was a spectacular piece of work to see Lawson Tait do this operation. He would go into the ward: the patient would be ready anesthetized across the bed, in the lithotomy position; Tait would kneel quickly beside the bed, holding in his mouth the silk-worm gut sutures, and in his hands, scissors and a Peasly needle. With the scissors, he would make, in a case of incomplete rupture, three quick gouges, one forming the lower end of the U, and one at each side; then pass the long needle deeply through all tissues, excepting the skin, take a suture out of his mouth, draw it through and tie tightly. The operation would be completed in from five to seven minutes. That was Tait's operation. If it were a complete laceration, the incisions would form the letter H, as Dr. Ill has told you, by carrying down a cut on either side from the cross incision. These incisions uncover the ends of the sphincter ani, and are supposed to go into the retracted ends of the muscle, so that when a stitch is placed deeply in at each end, the split ends of this muscle will be brought together, and an approximation of wide tissue be secured. Dr. Ill did not tell us that he dissected farther than can be done with the primary incisions made by Tait, but he does. The dissection must be made as

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indicated by the scar found as a result of the original rupture. In these cases the tears are rarely symmetrical. In examining patients before operation, you will frequently find a scar running up on one side only, making a deep cleft, the other side being full and thick. In such cases, after making the primary incisions, you must go up on the side in which you have seen the scar, and dissect deeply, so as to split these tissues; not superficially passing only under mucous membrane or scar tissue, which is formed over the tear, but you must go in deeply so as to split the muscular and fascial tissues, so as to bring them broadly together, just as you do with the sphincter ani. I believe this is a most valuable operation for the cure of these cases. In my own work I do not fear infection from the rectum in operating for complete supture, and habitually sew the anal mucous membrane from the rectal side, taking care to pass the sutures superficially and closely together. These tissues are very *tolerant* of germ infection, and, when infected, quickly recover. I prepare my patients by thorough catharsis and by washing out the rectum before the operation, and at the time of operation, and before I begin to work, I dilate the sphincter and attend to the thorough douching of the rectum myself, even when I know it bas been efficiently done by the nurse. Then when it comes to that part where the anus is to be closed, I sew up superficially with No. 1, twenty-day catgut, inside the anus, beginning at the top of the opening in the gut and sewing the mucous membrane together, being careful not to go deeply so that my sutures will not come in contact with the buried sutures, then I use the buried suture just as the essayist has described. Usually two stitches suffice, using No. 1, twenty day catgut for the sphincter muscle, then I put in as many as necessary, beginning at the bottom of the wound of the perineum, making the sutures all interrupted, no continuous suturing. In my first case I operated with a continuous suture, and fortunately that was a failure and taught me a valuable lesson. The suture in some part of its course became weakened and gave way, causing separation of the entire wound. I have never attempted its use since, and have the best of results by using the hardened, fine catgut.

Dr. Robert T. Morris, New York.—There are two points which I fear are going to be left out of this discussion if attention is not called to them. One is to bring the bulbo cavernous muscles together, and then your operation is half done. Secondly, this is one of the protected areas. Like the mouth, where we can make all the incisions we please, we can take out cancer, we can sew up cuts, and you can hardly help having union. Kangaroo tendon is best for sutures, I think. Every successful man has a successful method, and one successful method is to use buried sutures of kangaroo tendon for the bulbo cavernosus muscles.

Dr. Ill (closing the discussion).—I cannot agree with my friend Dr. Longyear that putting a suture through the rectal

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mucous membrane is not dangerous. The rectal mucous membrane is always more or less septic. Nobody can wash out the septic matter from the little convolutions and interstices in these cases, and there must be sepsis. When you have a clean condition, which you must have by the method described the dangers are entirely obviated so far as sepsis is concerned.

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CESAREAN SECTION, THE PREGNANT UTERUS BEING WITHIN AN UMBILICAL HERNIA.

BY

J. H. CARSTENS, M. D.,

Detroit, Mich.

(With one illustration.)

THIS being a very rare condition, I deemed a report of the case of sufficient interest to present it before this body. It is as follows: Mrs. M. M., age forty, mother of two children. Had been a widow for some years. Married again for a year, and came to consult me about her condition. On examination I found the following state of affairs: She was an immensely large woman, weighing 290 pounds. She had a pendulous abdomen, hanging nearly down to her knees. There was a large umbilical hernia through which the uterus projected, and she was at the end of pregnancy. On vaginal examination I could not reach the cervix. The vagina seemed to be a long, thin tube, and on account of the adipose tissue it was impossible to make out anything, except that she was pregnant. The uterus was partly, or rather the most of it, in the umbilical hernial sac.

She was anxious about the outcome of delivery, hence I told her to go to Harper Hospital when she was seized with pains and we would see what could be done after she was placed under an anesthetic. I heard nothing of her for a few weeks, when one day I was called to the Woman's Hospital where she had been sent by some of her friends. She insisted that I should look after her and expressed a desire to go to Harper hospital, so I sent her there in the ambulance.

Fetal life had ceased for twenty-four hours, as far as we could make out, hence I prepared her for operation the next morning, as she had had some labor pains, and, according to her estimate, it was now past the time for labor to set in.

The next morning, December 19, 1908, we operated, there being nothing to do except a Cesarean section. After getting her

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under an anesthetic and having the pendulous abdomen lifted in place, as near as could be done, I made an incision from the umbilicus downward for 6 inches. The abdominal wall was very thin and the muscular, cellular, and fibrous tissues were so stretched that I immediately reached the uterus. Passing my hand around it, I found that the whole uterus, up to the internal os, was in this hernial sac, which made it evident that it would

have been impossible to deliver her by the natural passage. I made an opening into the uterus and quickly delivered the dead fetus. I then sewed the incision of the uterus with a running suture of No. 3 catgut, through peritoneum and muscle up to the mucous membrane, but not including the latter. I amplified this with a second suture more superficial, to accurately adjust and turn in the peritoneal covering. I then turned attention to the umbilical hernia, overlapping it, flap-splitting, and the like, and made it as mechanically perfect as I could; but on account of the immense stretching, absorption of muscle and infiltration with fat, it was impossible to do a very good piece of surgery. However, the woman made a rapid, complete recovery, with still a projection at the umbilicus and the pendulous abdomen, retaining her 290 pounds in weight.

620 WOODWARD AVENUE.

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HIGH OPERATIONS IN CESAREAN SECTION.

ILLUSTRATED BY THE REPORT OF A CASE.

BY
WILLIAM H. HUMISTON, M. D.,
Associate Professor of Gynecology, Western Reserve University,
Cleveland, Ohio.

THE technic employed in the modern Cesarean operation has been so perfected and the indications for the operation so widened that it is now very frequently resorted to in order to give both mother and child greater chances for life. The rapidity in which this operation can be safely performed by an experienced abdominal surgeon is an important factor for the safety of the mother and the life of the child. Modern aseptic technic and favorable surroundings are essential and will insure practically a *nil* mortality, providing the mother has not already been infected by repeated examinations and efforts to deliver. In all cases in or near a city or town, where hospital accommodations are modern, the patient should be transported to such an institution for operation and convalescence.

Many general practitioners throughout the United States resort to the use of forceps needlessly and are not impressed with the fact that the high forceps operation is a major one, that it requires the hand of an expert obstetrician and a trained mind to avoid serious if not fatal injury to the mother and the sacrifice of the life of the child. Add to this a careless regard for a strict asepsis and you have a combination that results in disaster so frequently to the mother and in the delivery of a stillborn child, or its death a few days afterward from trauma sustained by the instrumental delivery. Many practitioners resort to the high forceps delivery who would not think of undertaking a Cesarean operation. If they did and their technic was as careless as in the high forceps operation, the resulting mortality would be appalling.

The general practitioner should not resort to the high forceps operation without consultation with, and the aid of, an expert

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obstetrician. The tears we see to the birth-canal as a result of forceps are simply inexcusable. Then add to this infection, which occurs so often, and we have a deplorable state of affairs. The relaxation and displacements of the pelvic organs resulting are attended with suffering and invalidism.

Contrast this with the results from the Cesarean operation as now so quickly performed by experienced operators, and you have another picture that is as enjoyable as the other is horrible.

Indications for the Cesarean Operation.—1. Contracted pelvis. 2. Conjugata vera of 9 cm. or less. 3. Newgrowths in pelvis or pelvic brim. 4. Myoma, dermoids, and ovarian cysts that obstruct head in birth-canal. 5. Placenta previa centralis. 6. Failure of head to engage. 7. Rupture of varicose veins in vagina. 8. Exostoses. 9. Eclampsia. 10. Carcinoma cervix. 11. Marked displacement of cervix following ventral fixation of uterus. 12. Scar tissue in cervix or vagina.

In most cases the necessity for operation should be determined in advance and the time for operation should be soon after labor has commenced, thus avoiding the exhaustion that comes after prolonged labor. How few practitioners make exact pelvic measurements of their patients before or at beginning of labor. The preparation should be as thorough as for any other form of abdominal operation. The widening of the field for Cesarean section has brought out a simpler technic. This simpler technic has reduced the mortality to almost nothing. The cases that now succumb to the operation are those in which infection has been introduced in the attempt to deliver by the use of forceps outside of hospitals, where the surroundings are filthy and preposterously inadequate.

"Less than a decade ago Cesarean section was considered an operation of doubtful expediency, only to be advocated in cases when the birth of a living child was at least improbable. The old statistics based on the operation performed upon exhausted women under inadequate asepsis were so uniformly bad that before the revised operation could win an established place in obstetrics it was necessary that a large number of favorable cases be obtained, in which the operation was absolutely indicated before its widespread application could be advocated.

"At first the question to be settled was, can the patient be delivered in any other way? If that question was answered in the negative, Cesarean section became the operation of choice, but no operator approached an abdominal delivery without great

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doubt as to what the outcome might be. With increased experience and improved asepsis and technic the question has come to be not, is Cesarean section absolutely necessary? but, is not Cesarean section safer than the other operative measures in doubtful cases? To-day this question can be answered definitely in the affirmative, that under proper conditions the patient can be subjected to operation at the time of election, not only with the feeling that all doubt as to the successful outcome both for her and the child have been removed, but also the assurance that, far from either her life or after-health being compromised by an abdominal delivery, an absolutely favorable prognosis can be given as in other simple abdominal operations, providing certain cardinal principles are followed out."

It is better to make the operation after the first stage of labor has progressed sufficiently to insure a dilatation of the cervix sufficient to insure free drainage. This is not absolutely essential, but desirable. The abdomen is prepared as carefully as is done for abdominal operations generally. High incision without eventration of the uterus is simpler, and devoid of shock. Handling of the intestines is avoided and the danger of infection greatly reduced. By high incision we mean from the umbilicus upward for 5 or 6 inches. After the abdominal cavity is open, long narrow gauze strips are packed around the uterus below the edges of the abdominal wound, and by pressure of the abdominal wall against the womb by the assistant's hands, blood and amniotic fluid are shut out of the abdominal cavity. This will render sponging and cleansing of the abdominal cavity unnecessary.

Carefully incising the uterine wall so as to avoid cutting the child, separating quickly the placenta and membranes with a sweep of the fingers, the extremities are seized and the child quickly delivered, cord clamped and severed, and turned over to a competent assistant for his undivided attention. A large curved needle is used to insert interrupted chromic catgut sutures to unite the uterine walls. If one is first placed in the upper angle, tied, and left long for traction, another in the lower angle for the same purpose, it will enable the assistant to hold them so that the uterus does not disappear, and then the other sutures are readily placed and tied. The peritoneal edges are united with a continuous suture of catgut and the abdominal incision closed after removing the gauze strips.

Ergotol administered hypodermically after anesthesia is

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started will insure uterine contractions following the delivery of the child. The uterus in contracting is removed from the region of the high incision and prevents any adhesions forming at this point.

briefly I will report two cases to illustrate the points I have brought out. Both had contracted pelvis. The first case is one in which forceps was used, and a stillborn child resulted, the mother dying from pulmonary thrombosis days after. The autopsy report is included.

CASE I.—*Death from pulmonary embolism following attempted forceps delivery and version.*

Mrs. R. S., age nineteen, married one year two months. Housewife; menses began at fourteenth year. Regular, of the twenty-eight-day type, occasional clots; duration four to five days, seldom any pain no leukorrhea; no miscarriages. High forceps attempted and delivery by version. October 18, 1907: Patient became very ill and was sent to Charity Hospital October 22 for the repair of a complete laceration of the perineum and tear of neck of urinary bladder received during forceps delivery October 18. Patient complains that urine trickles into the vagina. Feces passed through vagina. She had sharp pains, occurring every two or three minutes, located in left iliac region. General appearance very anemic. Weight, 98 pounds. Complains of frontal and occipital headaches. Appetite fair. Temperature, 99 4/5 to 101 4/5. Pulse, 120 to 124. Respiration normal.

Patient was delivered of a large child by attempted high forceps and version, stillbirth, October 18. Bladder, vagina, and rectum lacerated, the latter through sphincter ani. Great loss of blood. Free escape of urine per vagina and also fecal matter through same route. Physical examination: Pelvis justominor. Vaginal outlet torn clear through spincter ani. Vagina lacerated. Cervix bilateral laceration, extending on the left side to vaginal vault. Uterus enlarged.

Free pus discharged from sutures placed to repair the pelvic floor, perineum, and sphincter ani. These sutures were inserted after delivery at patient's home.

At the hospital sutures loosened by suppuration were removed, nonunion of sutured structures with free discharge of pus from torn edges. Careful cleanly expectant treatment was carried out. Later operation to restore lacerated structures was to have been done.

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Temperature and pulse became normal by November 1. Tear in bladder granulated so that urine was passed normally, but the feces were still discharged through vagina.

On afternoon of November 5 some friends of the patient brought in a quantity of fruit and other food, unbeknown to nurses or house doctor. It was found out later that patient ate a quantity of the food and fruit. She was sleeping soundly at 11. P. M. November 5. About midnight the patient called the nurse and complained of giddiness in her head and of breathlessness. Respirations became more and more rapid and labored. Marked air hunger developed. Pulse became rapid and weak and finally imperceptible at wrist. Lips and finger-tips cyanotic and cold. Complained of feeling cold about chest. Face pale. Very restless and apprehensive look. Patient said she was going to die. Conscious to within five minutes of death. Became rapidly worse, and died at 1.30 A. M. November 6 A. M. in spite of all special stimulants and the administration of oxygen by the house staff.

Autopsy, 9 A. M., November 6, 1907.

Heart.—Apex in fifth interspace just inside left nipple line. Right auricle distended with dark fluid blood. No definite clots in heart. Valves competent. Heart muscles somewhat paler than normal. Pericardial fluid clear, about 10 c.c.

Lungs.—Both free throughout. No pleurisy. Lungs small, pale, and partially collapsed. No pneumonic process evident. On severing the left pulmonary artery a rather soft, friable necrotic-looking embolus with adherent blood clot was found completely plugging the vessel. The pulmonary artery entering the right lung was found occluded by a similar embolus. In all probability the embolus had primarily lodged at the bifurcation of the main pulmonary artery and sent fragments into the branches going to both the lungs. The bronchi contained some frothy mucus. No distinct areas of infarction.

Uterus.—Large, somewhat boggy; cervix lacerated. On opening uterus there was found near the fundus on the anterior wall a brownish necrotic mass, resembling closely the emboli found in the lungs. The uterus was lined with shaggy necrotic tissue. A thrombophlebitis was found in the plexus of veins in the broad ligament. No distinct phlebitis could be made out in the iliac veins.

Urinary Bladder.—Mucosa thickened and inflamed. Granulation tissue filling up a recent vesicovaginal fistula near the neck

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of the bladder. The posterior vaginal wall was lacerated down through sphincter ani. Stomach dilated four fingers below umbilicus. Filled with fragments of food and acid fruits. Strongly acid, fermented odor to contents. Head not opened.

CASE II.—*The second case is one in which forceps were resorted to and after great effort the child was delivered dead. The mother sustained great injury to her birth-canal, was septic for a time, but finally was able to be about some, but remained a semi- invalid for two years, then underwent operations to restore the torn uterus, pelvic floor, and perineum to a normal condition. Recovered quickly, became pregnant in two months and was delivered by Cesarean operation of a living healthy child.*

Mrs. L., age twenty-four, height 4 feet 6 inches, weight 105 pounds, came to consult me January 6, 1909; married three years. Been pregnant but once, two years ago, child was stillborn, forceps delivery at her home, Philadelphia, Pa. Her menstrual history is as follows: Began at eleven and a half years, regular every twenty-eight-day type, duration two to three days, painless up to the time she became pregnant. Since birth of child suffers pain and flows too freely and passes clots, and it continues for five days. Leukorrhea since birth of child—stains her clothing. Complains now of the following symptoms: bearing-down pains in lower abdomen, backache, headache, occipital, pain radiating down thighs, nauseated at menstrual period, leukorrhea. Appetite poor, digestion disturbed, pain after eating, gas, bowels constipated, urination painful and frequent. Also complains of swelling in right groin which enlarges and comes down on coughing or walking.

The history of the development of her present condition is as follows: was well until the instrumental delivery of a stillborn child two years ago. Suffered great pain and had fever following and was confined to her bed for some time. Has been unable to regain her former state of health. Feels discouraged. Her general and family history is good.

Examination.—Heart and lungs normal. Abdomen normal except as to pain on pressure in both lower quadrants. Vaginal outlet large, vagina lacerated to sphincter ani, rectocele, cervix low down and lacerated on right side to vaginal junction. Uterus enlarged, prolapsed, movable, sensitive to touch.

The promontory of sacrum was readily felt by finger. Both tubes and ovaries palpable, right ovary slightly larger than left,

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but neither seemed abnormal. The cervical canal was filled with a mucopurulent discharge.

Operation January 11, 1909. Curetment, trachelorrhaphy, perineorrhaphy, and radical operation for right femoral hernia. She made a rapid recovery and left the hospital in three weeks. At time of discharge the pelvic measurements were taken:

	Crests	25. cm.
	Spines	25. cm.
	Ext. conjugate	17. cm.
Internal conj.	Diagonal	9.5 cm.
	True	7.5 cm.
	Right oblique	18. cm.
	Left oblique	18. +cm.
	Tuberosities	7. cm.

This woman and her husband were desirous of having children and promised to return to me if pregnancy occurred.

I next saw her October 9, 1909, when she called to see me at the hospital, stating she was pregnant. On examination I determined she was about seven months, pregnant. I explained then to her how she could have a living child through an abdominal incision. She had gained in weight, strength, and color, and was good in spirits. The next visit she was accompanied by her husband and all arrangements were made for her to enter the hospital the middle of December, as I estimated her time would be up about Christmas day.

She was admitted December 14 and ordered daily baths. No vaginal examination to be made. Abdominal palpation found the head down but not engaged. December 16, during the afternoon, patient complained of backache and at 8 P. M. it was noted slight pains at intervals of one-half hour had existed for three hours. At 9 o'clock, after thoroughly cleansing of vulva, I made a vaginal examination, using rubber gloves, and found the cervical canal would admit the finger. The patient was prepared for operation, Drs. O. T. Thomas and R. A. Bolt assisting.

The hospital Alumni Banquet was in progress and the physicians, about forty in number, were invited to the operation which took place in the amphitheater. Ergotol, half a dram, was given hypodermically as the anesthetic was started, which was ether by the drop method. An incision 5 inches in length was made from the umbilicus upward and the uterus exposed. Gauze packs were placed on both sides and above the uterus. A longitudinal incision was made in fundus of uterus while an

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assistant held the uterus firmly up against the abdominal wall by pressure from below. The placenta was immediately beneath the incision; the hand was quickly pushed through it, the feet were seized and the child quickly delivered, the cord being clamped in two places and severed and turned over to an assistant who took charge of it. The child cried lustily.

Placenta with membranes was quickly removed and a chromic catgut No. 2 suture was placed through the uterine wall at upper and lower angle of incision, tied, left long and held by an assistant while the intervening sutures, interrupted, were inserted and tied. This prevented the uterus from receding from the abdominal incision. A continuous suture of catgut united closely the peritoneal surface of the uterus. The abdomen was closed with layer sutures, and the patient put to bed in good condition—pulse 72. The child was delivered in two minutes, the time of entire operation thirty minutes, and no more blood lost than at normal labor. The child weighed 5 1/2 pounds, was plump and strong, and able to nurse the following morning. The patient had a normal convalescence, sitting up the eighth day, and left the hospital January 13, 1910.

This patient suffered so little in comparison to her first confinement that she is determined to have more children, and it is possible I may be able to equal Dr. Davis's record of five Cesarean operations upon one woman. The incision at the fundus, in my opinion, is less liable to give after-trouble than the lower incision.

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CESAREAN SECTION BY THE SMALL MEDIAN INCISION ABOVE THE UMBILICUS.

BY
ASA B. DAVIS, M. D.,
New York.

(With five illustrations.)

THE Cesarean operation has held and will continue to hold the attention of obstetricians. From what is known of early recorded cases from histories handed down by tradition and from present-day practices in uncivilized countries, we may properly believe that this procedure suggested itself to primitive peoples and was practised by them very early in the history of man's reproduction.

We may note, in passing, that Cazeaux, in 1842, four years before the discovery of anesthesia and more than thirty-five years before Listerism and the appearance of the Sänger operation, reports in France the delivery of 164 women by Cesarean section, sixty-two of whom survived. He points to the danger, for mother and child in these cases of prolonged labor, rupture of the membranes for a considerable time, and attempts at vaginal delivery before Cesarean section is undertaken. He used the median incision, 13 to 16 cm. long below the umbilicus, and did not deliver the uterus from the abdomen.

Lusk reports Spaeth as writing, that before Sänger's operation there had not been a case at the Lying-in Hospital at Vienna during this century, in which the mother had survived, and also that Baudon, writing in 1873, said: "In Paris there has not been one successful case in eighty years, although in the present century the operation has been performed on perhaps as many as fifty women."

Harris, of Philadelphia, includes the statistics of Ralford and reports for Great Britain, up to 1879, 128 cases with twenty-six recoveries; for the United States, up to 1885, 134 cases with fifty-three recoveries. He states that from April 1, 1884, to February, 1885, in this country, there were six Cesarean sections and all of the mothers and children were lost. He also reports in 1887 that since 1646 there were records of eleven women, far advanced in pregnancy, having had the abdomen and uterus ripped opened by horned cattle and that eight women

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and five children survived and that formerly suturing of the uterus was not practised, and not until 1828 was it done in this country.

The same author tells us in the *American System of Obstetrics*, Hirst, published, in 1889, that Sänger did his first Cesarean operation in August, 1880, accurately suturing the uterine wound with the peritoneum, edge to edge, and that he thereafter perfected his technic until it became known as "The Improved Method of Sänger." It revolutionized the opinion as to the dangers of laparo-hysterotomic delivery; and among other statistics he reports eighty operations in eighteen German cities by thirty-eight operators, with only twelve maternal deaths.

The salient points of the Sänger operation are: the cleansing of the abdomen and vagina with antiseptic solutions; long median incision in the lower part of the abdomen, placing two long sutures in the upper part of the wound; delivery of the uterus; the constriction of the cervix by Esmarch's elastic tube, drawing the long sutures tight and closing the abdomen above the uterus, protecting the abdominal cavity with rubber sheeting about the cervix; opening the uterus by vertical incision in the anterior wall just below the fundus to just above the cervix; emptying the uterus and closing it with three layers of interrupted sutures—one deep layer, one superficial interrupted and a Lembert suture over these.

As a worker in the Lying-in Hospital, New York, the writer would present a record of the Cesarean operations performed in that hospital. This can best be done by quoting directly that portion which refers to Cesarean section from a paper entitled, "Observations and Statistics on Sixty Thousand Labors Occurring in the Service of the Society of the Lying-in Hospital of the City of New York," by Dr. Markoe and presented by him at the International Medical Congress in Budapest, September, 1909, and then, following his plan, report the cases which have occurred in the hospital from that time to date.

CESAREAN SECTION.

Cesarean section has been performed 197 times in the service of 60,000 cases, or once in 304.56 cases (0.33 per cent.). In the uncomplicated cases the results were as follows:

Number of mothers who survived	116	93.55 per cent.
Number of mothers who died.....	8	6.45 per cent.
Total.....	124	

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Number of children who survived.	112	90.32 per cent.
Number of children stillborn.....	3	2.42 per cent.
Number of children dying during the puerperium.....	9	7.26 per cent.
Total	124	

The causes of death in the uncomplicated cases were:

Acute dilatation of the stomach...	1
Ether.....	1
Pneumonia	4
Pulmonary embolism	1
Septicemia.....	1

In the complicated cases the results were as follows:

Number of mothers who survived..	49	67.12 per cent.
Number of mothers who died.....	24	32.88 per cent.
Total	73	

Number of children who survived..	50	67.57 per cent.
Number of children stillborn	11	14.86 per cent.
Number of children dying during the puerperium.....	13	17.57 per cent.
Total.....	74	(one case of twins.)

The causes of death in the complicated cases were:

Carcinoma, immediate hysterectomy.....	1
Eclampsia.....	4
Endocarditis.....	1
General peritonitis (outside manipulation).....	6
Hysterectomy for ruptured uterus.....	1
In labor three days (outside manipulation).....	1
Intestinal obstruction.....	1
Nephritis.....	1
Peritonitis.....	1
Pneumonia and sepsis (outside manipulation)...	1
Pneumonia.....	2
Pott's disease.....	1
Prolonged labor, second stage thirteen hours (shock).....	1
Sepsis (outside manipulation).....	1
Suppression of urine.....	1

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In the 197 cases of Cesarean section there were eight cases in which death was unavoidable, resulting from the following causes:

Acute dilatation of the stomach	1
Eclampsia	4
Ether	1
Pott's disease	1
Pulmonary embolism	1

In the ten moribund cases operated upon, death resulted from the following causes:

Acute dilatation of the stomach	1
Antepartum eclampsia	2
Carcinoma of the uterus	1
Died on table (ether)	1
Endocarditis, postpartum hemorrhage	1
Lobar pneumonia (antepartum)	1
Nephritis	1
Prolonged labor (forty-eight hours), failure of forceps, outside manipulation	1
Prolonged labor (three days), outside manipulation	1

Since Dr. Markoe's report, November, 1908, to August, 1910, Cesarean section has been performed fifty-nine times in the service of 8,200 cases, or once in 138.98 cases (0.72 per cent.).

Number of mothers who survived	54	91.53 per cent.
Number of mothers who died	5	8.47 per cent.
Total	59	
Number of children who survived	51	83.60 per cent.
Number of children who died	5	8.20 per cent.
Number of children stillborn	5	8.20 per cent.
Total	61	(two cases of twins).

CAUSES OF MATERNAL DEATHS.

Toxemia of pregnancy; eclampsia; peritonitis	1
Uterine fibroid	1
Puerperal sepsis	1
Streptococcus; cerebrospinal meningitis	1
Mural abscess; general peritonitis; hysterectomy	1
Total	5

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CAUSES OF FETAL DEATHS.

Hemophilia	3
Prematurity (maternal eclampsia and toxemia of pregnancy)	1
Prematurity; atelectasis	1
Total	5

CAUSES OF STILLBIRTHS.

Twins; eclampsia; toxemia of pregnancy	2
Double monster (embryotomy)	2
Labor complicated by uterine fibroid	1
Total	5

In the service of 68,200 cases at the Lying-in Hospital there were 256 Cesarean sections performed, the results of which are as follows:

Number of mothers who survived	220	85.94 per cent.
Number of mothers who died	36	14.00 per cent.
Total	256	
Number of children who survived	207	79.92 per cent.
Number of children who died	33	12.74 per cent.
Number of children stillborn	19	7.34 per cent.
Total	259	(three cases of twins).
Maternal mortality		14.06 per cent.
Fetal mortality		20.08 per cent.

Of the 256 Cesarean sections seventy-eight were performed by the writer.

Number of mothers who survived	65	83.33 per cent.
Number of mothers who died	13	16.67 per cent.
Total	78	
Number of children who survived	64	80.00 per cent.
Number of children who died	11	13.75 per cent.
Number of children stillborn	5	6.25 per cent.
Total	80.	

(Two cases of twins).

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In the thirteen maternal deaths the causes were:

Prolonged labor, sepsis, shock, suppression of urine. Midwife in charge forty-eight hours. Died twenty-two hours after operation.

Prolonged labor, attempts at delivery, sepsis before admission to hospital. Died on fourth day.

Prolonged labor, outside attempt at high forceps, general streptococcemia. Died on third day.

Prolonged attempt at high forceps by private physician, general streptococcemia. Died on second day.

Shock, atonic uterus, persistent slow hemorrhage, third Cesarean operation. Died on second day.

Lobar pneumonia, moribund when Cesarean section was done. Died fourteen hours after delivery.

Acute dilatation of the stomach and anesthesia. Died thirty minutes after operation.

Septic endometritis. Died on fifty-fourth day.

Toxemia of pregnancy, eclampsia, twins nine and one-half months. Died on operating-table. Twins survived.

One case discharged on fifteenth day in good condition. Returned to hospital on twenty-ninth day with uterine and abdominal wall adherent to mural abscess. Died on tenth day after operation from general sepsis. Eclampsia; delivered at nine and one-half months. Died on second day. General streptococcemia with cerebrospinal meningitis; delivered at ninth month; moribund. Died seven hours after delivery. General sepsis with streptococcemia. Midwife in charge ninety hours before admission to hospital. Died on sixth day.

In the eleven fetal deaths the causes were:

Prolonged labor, sepsis in mother. Died on third day.

Attempts at high forceps, forceps wounds, cephalhematoma, sepsis in mother. Died fifty-three hours after birth.

Impacted face, chin posterior; prolonged labor. Died of marasmus on twenty-eighth day.

Prolonged labor, attempted high forceps by private physician. Died from streptococcemia on tenth day. Mother died from streptococcemia on second day.

One child died on fifth day; mother having died fourteen hours after operation from lobar pneumonia.

Hemophilia neonatorum. Died on fourth day.

Atelectasis; having been cured of hemophilia neonatorum. Died on fifty-fourth day.

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Prematurity, eight and one-half months. Died on twenty-third day. Mother died of eclampsia on second day.

Delivered at ninth month. Died on eighteenth day. Mother died seven hours after operation from general streptococcemia with cerebrospinal meningitis.

Prematurity. Died on second day.

Edema, attempted high forceps, depressed fracture, probably, of parietal bone made by promontory of sacrum. Died on tenth day (first child died on twenty-fourth day of marasmus).

In the five stillbirths the causes were: 1. Prolonged labor, attempted forceps. 2. Not viable. 3. Prolapse of cord while patient was taking anesthetic preparatory to Cesarean section. 4 and 5. Twin (two) in an eclamptic in which there was no sign of fetal life upon admission of mother (mother survived).

There were sixty-seven women operated upon, twelve of whom had repeated Cesarean section.

In ten of the cases the operation was done twice:

3767, second Cesarean section. First by another operator in another hospital. Second by author.

4830, second Cesarean section. First and second by author. Same as No. 3093.

7398, second Cesarean section. First by another operator in this hospital. No. 4729.

10128, second Cesarean section. First and second by author. Same as No. 3857.

10792, second Cesarean section. First and second by author. Same as No. 7545.

11607, second Cesarean section. First and second by author. Same as No. 8918.

14565, second Cesarean section. First by another operator in this hospital. Second by author.

17310, second Cesarean section. First and second by author. Same as No. 7391.

17780, second Cesarean section. First and second by author. Same as No. 12583.

17938, second Cesarean section. First and second by author. Same as No. 10487.

In one case the operation was done three times:

11481, third Cesarean section. The second and third by the author. Same as No. 6449. First by another operator in this hospital.

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In one case the operation was done five times:

16500, fifth Cesarean section. The third, fourth and fifth by the author. Same as Nos. 5747 and 11906. First two by other operators in this hospital. Also the first delivery by the author by craniotomy, No. 20137, and she reports that she has had an abortion done.

In this number of cases there were sixty-five in which some form of pelvic contraction made the operation necessary.

For neoplasms:

One case of multiple sarcoma of pelvic and abdominal viscera.

One case of carcinoma of cervix and vagina.

One case of carcinoma of rectum and sigmoid.

One case of neoplasm of cervix.

In the seventy-eight operations there were seven cases of eclampsia.

One case of lateral placenta previa, flat pelvis, persistent bleeding, not in labor.

One case of tonic contraction of the uterus (second twin), ruptured uterus suspected but not found.

One case of lobar pneumonia, patient moribund.

One case of cerebrospinal meningitis with streptococcemia, patient moribund.

In two cases rupture of the uterus was found in patients upon whom Cesarean section had previously been done. Both of these cases had allowed themselves to go on in labor for forty-eight hours before reporting to the hospital for second Cesarean section.

Cesarean section shares with abdominal surgery in general the greatly diminished risk brought about by aseptic methods and improved technic. It has been changed from a procedure of absolutely last resort to one having a broad field of election. Women are successfully delivered now by this operation for whom it would not have been entertained as suitable a few years ago. The still relatively high maternal mortality following Cesarean section is largely chargeable to this broadened field and to the condition in which the patient is found before operation rather than to the operation itself. This is notably so in a certain number of eclamptic cases. They die regardless of how they are delivered, yet Cesarean section is the safest and quickest way to deliver them. During the past nine months the writer has performed this operation eighteen times; fifteen mothers and thirteen children survived and were discharged

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from the hospital well on the following days: one on the eleventh day, seven on the twelfth day, one on the thirteenth day, one on the fifteenth day, one on the seventeenth day, one on the nineteenth day, one on the twenty-fourth day, one on the twenty-fifth day, and one remained to be operated upon for umbilical hernia which she had had for years, and was discharged well on the fifty-ninth day.

INDICATIONS FOR THE OPERATION.

There are a certain number of women in whom the disproportion between the size of the pelvic passage and the passenger who is to traverse it is so marked that it is easy to say that Cesarean section is the only thing to do. This will include all marked deformities of the pelvis caused by rickets, malacosteon; exostosis; neoplasms of the pelvis, uterus or rectum; deformities of the vagina; atresia, etc.; deformities of the uterus; cicatrices of the cervix following operation or an old laceration. And for the child, a large immoldable head with thick cranial bones, monsters, and the like.

There is a class of cases in which the Cesarean operation comes into competition with delivery by forceps, podalic version, and accouchement forcé, where it becomes a matter of judgment with the surgeon which operation shall be done. He seldom regrets electing Cesarean section; it has been our experience often to deplore having done the others. One cannot easily forget the dead and maimed children, some of the latter carrying their physical and mental deformities throughout their lives, or the mothers who are rendered permanent invalids because of injuries and lacerations which are incapable of being entirely cured. These include those pelvic deformities of less degree, certain cases of placenta previa, of tonic contraction of the uterus, some cases in which ventral fixation has been done, some eclamptic cases, moribund women where the operation is done wholly in the interest of the child, and in some cases of accidental hemorrhage.

THE MOST FAVORABLE TIME IN PREGNANCY IN WHICH TO PERFORM THE OPERATION.

In a large percentage of these cases the operatior has no choice; the women are already in labor, or other conditions appear as

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emergencies in women not in labor which demand immediate delivery. In those cases which are under observation before labor we believe it is wiser to wait until labor has assuredly begun, thereby taking nature's judgment that the child is mature and at full term, and then to operate without delay. Failure to wait for this time has resulted in the delivery of at least one premature infant which did not survive after careful taking of the menstrual history and examination of the fetus by several consenting consultants, one of whom was the writer. It is not necessary to wait for dilatation of the cervix. There is risk in dilating it manually. Repeatedly we have operated upon primiparous eclamptic women, not in labor nor at term, with the cervix still elongated and barely admitting the finger, whose uteri drained perfectly after the Cesarean operation without the cervix having been interfered with in any way.

PREPARATION OF THE PATIENT.

This should be done as for any other abdominal section and sterile drapings should cover the patient except the site of the operation. There should be no vaginal douche or attempts at vaginal cleansing. Examinations by vagina should be restricted. There should be assurance that the child is alive. If possible, the membranes should be intact. Following the advice of Oldshausen, twenty-five minims of ergot should be injected deeply into the muscle half an hour before the operation is to begin. This has been found to be a valuable precaution against atony of the uterus and undue hemorrhage.

THE OPERATION.

With the patient fully anesthetized and in the horizontal position on the table, the abdomen is opened by a median incision 8 to 10 cm. long from above down to the umbilicus. One or two gauze pads wet in warm salt solution are placed in the abdomen above the fundus to hold back the omentum and intestines. An assistant makes pressure with his hands outside of the abdomen against the sidewalls, rotating the uterus so that its anterior surface presents and is held well up against the abdominal opening. He continues this pressure until the uterus is emptied and at least partly closed by sutures. The uterus is then carefully opened by successive strokes of the scalpel

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down to the membranes, with a median incision from just below the fundus down its anterior surface and a little longer than the abdominal opening. The hand is passed into the uterus and swept between the membranes and the uterine wall, or, if the placenta presents, it is either torn through or pushed aside. As the hand is withdrawn the anterior thigh is grasped and breech extraction is done, doing a podalic version if the breech presents below. An assistant clamps the cord in two

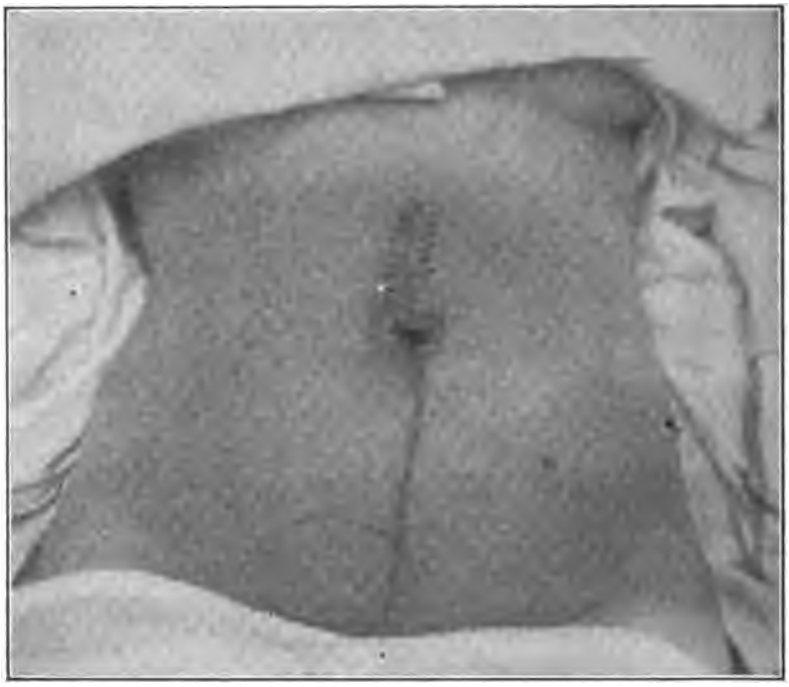

FIG. 1.—Cicatrix and outline of uterus eleven days after Cesarean section.

places, it is cut and the child preferably is taken from the room to be resuscitated.

A bullet forceps grasps the uterine wall at the upper and the lower angles of the wound. The placenta and membranes are extracted and the uterus cleared of clots. No attempt is made to dilate the cervix from above. No gauze drain is passed down through it. If the hemorrhage is at all profuse a sterile towel or gauze is quickly packed into its cavity. The uterus is then closed by six or eight deep interrupted sutures of No. 2

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chromic gut, and these are buried by a continuous suture of the same material in the form of a rather deep Lembert stitch—the uterine packing being gradually withdrawn. The abdominal pads are removed; no attempt is made to cleanse the abdominal cavity, and sponging and handling the uterus is avoided as much as possible. The uterus readily assumes the size and position of that organ after normal delivery. The abdomen is closed in three layers. A small gauze dressing is applied over the abdominal wound and held in place by tight adhesive straps across the wound. An ordinary abdominal binder is

FIG. 2.—Scar after first Cesarean section.

pinned tight across the wound and loose elsewhere. By this means the uterus is allowed free play in the lower abdomen and the abdominal wall is not held tight against the uterus. The patient is placed in bed, the head of the bed is well raised to favor drainage and the decent of the uterus toward the pelvis.

In uncomplicated cases the after-treatment differs in no way from that of any laparotomy; usually, after the first forty-eight hours, in no way from that of the ordinary postpartum woman. She nurses her child, she is allowed to sit up in a chair on the eighth day and thereafter to walk about the wards, and she is discharged from the hospital on the twelfth day, postpartum. We are not unmindful of the fact that this is a

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serious and dangerous operation—not more serious nor more dangerous than a number of other obstetrical procedures. We do not feel that we have the right to render these women sterile; we do the Cesarean operation repeatedly on the same woman.

Of the seventy-eight Cesarean sections performed by the writer, the first three were done in tenements; the uterus was delivered. Since August 12, 1903, he had done the operation

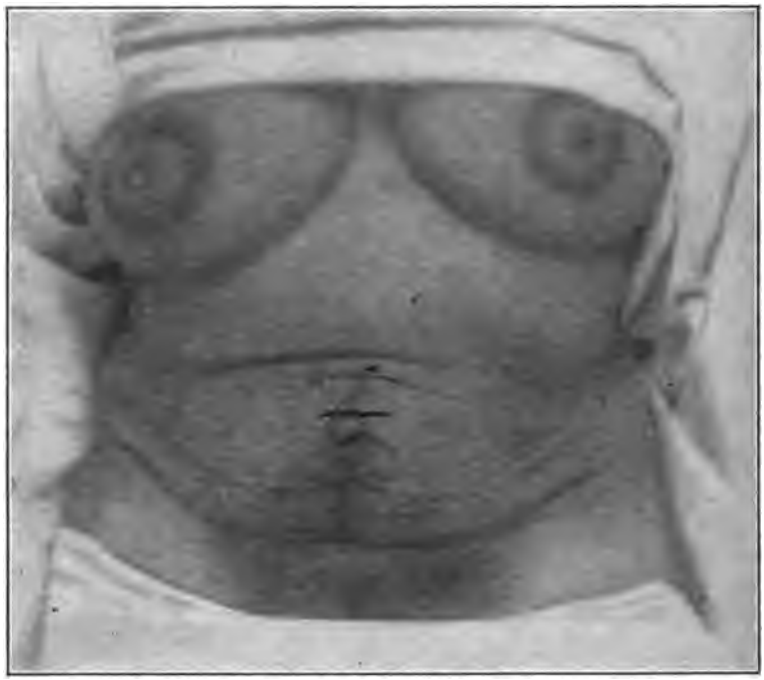

FIG. 3.—Shrunken and folded scar after Cesarean secton. Rhaichitic dwarf.

seventy-five times and in no instance has the uterus been removed from the abdomen. Beginning with case four, a much smaller incision was used, half above and half below and to the left of the umbilicus. In the seven cases following this one, the writer gradually made the incision smaller and carried it higher up; until November 20, 1904, he, so far as he knows, first independently conceived and practised the small high median incision, entirely above the umbilicus, in a woman, the twelfth in his series (No. 4830), being the second Cesarean on this woman, same as case four (No. 2793). More than two

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years after this date, the following allusion to the high incision was brought to the writer's attention in Blundell's Midwifery, published in 1842. He says: "Some might think, perhaps, that in removing the fetus by the Cesarean incision we ought to make the opening above the navel instead of below. To

FIG. 4.—Scars after five Cesarean sections. Last three by the small high incision

this opinion, however, I can by no means accede, for if we make the incision above the navel the intestines will protrude more copiously, the region of the placenta will most probably be divided and, on the abstraction of the ovum, the womb collapsing into the pelvis will sink below our reach, disappearing beneath the intestines which fall over it. Place the incision,

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therefore, below the navel; by this collocation you will avoid these impediments." Except in very recent writings, this is the only mention of the high incision above the umbilicus known to the writer.

There is no reason why this operation should be singled out from all others as one which must be performed in great haste. It should be done with the deliberation called for in any other abdominal operation. There is great danger in doing otherwise. Several times the writer has found the intestine in front of the uterus. Once he has seen it injured.

FIG. 5.—Rhachitic Dwarf showing scar after her second Cesarean section.

The incision should be long enough to allow easy delivery of the child, but the abdominal wall at this point in the full-term woman is thin and stretches easily. The small high incision does not allow easy exposure or escape of the abdominal contents. Not infrequently, all that we see is the uterus and a small portion of omentum. This wound is away from the site of greatest strain upon the abdominal wall, at a point reinforced by the recti muscles as they approach each other toward their upper attachments. It is small. We have never seen hernia following it. The liability to adhesion between the abdominal wound and the uterine wound is greatly diminished.

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CESAREAN SECTION, WITH DATES, SERIAL NUMBERS, AND DETAILS OF CASES.

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
1	21259	Nov. 19, 1900	Jan. 23, 1901	Vertex L. O. A.	Rachitic dwarf.	Lived.	36th	.....	I
2	22752	Aug. 18, 1901	Aug. 18, 1901	Vertex L. O. P.	Flattened general contracted pelvis. Bicorn. uterus.	Still-birth.	43d	.....	I
3	23369	Aug. 10, 1901	Nov. 6, 1901	Vertex	General contracted. Prolonged labor.	Died 3d day (Midwife).	22 hours, died.	Sepsis; suppression of urine.	I
4	2973	July 20, 1903	Aug. 12, 1903	Vertex L. O. A	Rachitic pelvis.	Lived.	38th	First case in which I did not deliver the uterus.	I
5	3093	Sept. 15, 1903	Sept. 22, 1903	Vertex L. O. A.	Funnel pelvis.	Lived.	34th	.....	III
6	3168	Sept. 17, 1903	Oct. 13, 1903	Vertex L. O. A.	Anchylosis right hip, Naegele pelvis.	Lived.	58th	.....	I
7	3228	Oct. 24, 1903	Nov. 23, 1903	.....	Marked lardosis.	Not viable.	39th	General sarcomatosis; pregnant 7th mo. Sarcoma of pelvic and abdominal organs; anasarca. Died at home, 76th day	I
8	3383	Nov. 21, 1903	Dec. 18, 1903	Vertex L. O. A.	Rachitic dwarf.	Lived.	52d	.....	I
9	3684	Feb. 26, 1904	Feb. 26, 1904	Vertex R. O. A	Rachitic, oblique.	Lived.	26th	.....	I
10	3766	Mar. 18, 1904	Mar. 18, 1904	Vertex R. O. A.	General contracted pelvis.	Lived.	19th; 4th died.	Sepsis; prolonged labor; attempted delay before administration. Second Cesarean section.	II
11	3857	Apr. 4, 1904	Apr. 11, 1904	Vertex	Rachitic pelvis.	Lived.	30th	.....	III
12	4830	Oct. 19, 1904	Nov. 20, 1904	Vertex L. O. A.	Rachitic pelvis. Same as No. 4 (2973).	Lived.	29th	First case with medial incision wholly above umbilicus.	II
13	4867	Nov. 29, 1904	Nov. 29, 1904	Vertex R. O. A.	Naegele pelvis; right side.	Lived.	19th	Scar 7 cm. long. Sitting up on 14th day.	I
14	5079	Jan. 17, 1905	Jan. 17, 1905	Vertex L. O. A.	Flat pelvis. Long labor. Forceps attemp. by outside doctors.	Died in 53 hours.	3d died.	General peritonitis; gangr. endometritis; general streptococcoemia and Staphylococcemia.	I
15	5249	Feb. 2, 1905	Feb. 20, 1905	Vertex L. O. A.	.....	Marasmus. Died 25th day	41st	.....	I
16	5747	May 27, 1905	June 7, 1905	Breech L. S. A.	Double promontory. Rachitic pelvis.	Lived.	18th	Before this other operators did craniotomy and two Cesareans.	IV
17	5880	July 23, 1905	July 23, 1905	Vertex	Carcinoma cervix and vagina	Lived.	29th	.....	II
18	6260	July 8, 1905	Sept. 11, 1905	Vertex L. O. A.	Flat pelvis.	Lived.	29th	.....	I
19	6449	Sept. 28, 1905	Oct. 18, 1905	Vertex R. O. A.	General contracted.	Lived.	18th	C. S. 6/21/'04. Other operator.	II

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CESAREAN SECTION WITH DATES, SERIAL NUMBERS, AND DETAILS OF CASES. (*Continued.*)

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
20	7194	Mar. 11, 1906	Mar. 12, 1906	Vertex L. O. A.	Flat figure 8 pelvis.	Lived.	16th		I
21	7276	Mar. 27, 1906	Mar. 27, 1906	Face R. M. P.	Oblique contracted pelvis Impacted Face. Tonic uterine contraction.	Marasmus. Died 28th.	36th	Ceph. and podalic versions failed.	I
22	7391	Apr. 13, 1906	Apr. 14, 1906	Vertex L. O. A.	Rachitic dwarf.	Lived.	25th		I
23	7398	Apr. 16, 1906	Apr. 16, 1906	Vertex L. O. A.	Contracted pelvis.	Lived.	23d	C. S., Oct. 27, 1904. Other operator.	IV
24	7545	May 10, 1906	May 10, 1906	Vertex L. O. A.	Flat pelvis.	Lived.	38th		I
25	8727	Nov. 25, 1906	Nov. 25, 1906	Vertex R. O.	Transverse General contracted pelvis.	Lived.	15th		II
26	8931	Dec. 25, 1906	Dec. 26, 1906	Vertex L. O. A. Twins.	First child delivered in O. P. D. 38124. Tonic uterine contracture.	Died.	31st	Version and high forceps attempted. Admitted as ruptured uterus.	IV
27	8918	Dec. 23, 1906	Dec. 23, 1906	Vertex L. O. A.	Flat general contracture.	Lived.	18th		II
28	9189	Feb. 1, 1907	Feb. 1, 1907	Vertex R. O. P.	High forceps attempted; presented dorsal. Flat pelvis. Long labor.	Died 10th.	2d	General Streptococcemia both in mother and child.	I
29	10100	Apr. 29, 1907	June 16, 1907	Vertex L. O. A.	Second Cesarean. Same as No. 65. Rachitic pelvis.	Lived.	22d		I
30	10128	May 12, 1907	June 19, 1907	Breech L. S. A.	Rachitic pelvis; Long spines.	Lived.	18th	First Cesarean, No. 11 (3857).	IV
31	10487	Aug. 4, 1907	Aug. 5, 1907	Vertex L. O. A.	Flat justo minor.	Lived.	34th		II
32	10499	Aug. 6, 1907	Aug. 6, 1907	Vertex R. O. A.	Flat justo minor.	Lived.	20th		I
33	10792	Sept. 10, 1907	Sept. 10, 1907	Vertex L. O. A.	Flat reachitic pelvis.	Lived.	17th	First C. S. Same as No. 24 (7545).	II
34	10968	July 19, 1907	Oct. 7, 1907	Vertex R. O. A.	Rachitic dwarf.	Still-birth.	27th	Prolapsed cord while taking ether for Cesarean section.	I
35	11000	Oct. 13, 1907	Oct. 13, 1907	Vertex R. O. A.	Double promontory. Lat. contracted pelvis.	Lived.	15th		III
36	11157	Nov. 7, 1907	Nov. 8, 1907	Vertex R. O. A.	Flat pelvis.	Lived.	29th		II
37	11169	Nov. 10, 1907	Nov. 10, 1907	Vertex L. O. A.	Eclampsia, 9 1/2 months.	Lived.	17th		I
38	11258	Nov. 22, 1907	Nov. 23, 1907	Vertex	General contracted pelvis.	Lived.	16th	First child died 6th day p. p. high forceps.	II
39	11481	Dec. 25, 1909	Dec. 26, 1907	Vertex L. O. A.	General contracted pelvis.	Lived.	2d died.	Shock; Hemorrhage. 3d C.S.	III
40	11607	Jan. 9, 1908	Jan. 9, 1908	Vertex.	Ruptured uterus. Same as No. 27 (8918) 2d C. S.	Lived.	24th	Delayed reporting until long in labor. Resection of tubes.	III
41	11823	Feb. 5, 1908	Feb. 5, 1908	Vertex.	Impacted in pelvis. Fibroids of uterus.	Lived.	19th		IV
42	11906	Feb. 16, 1908	Feb. 16, 1908	Breech.	Fourth Cesarean.	Lived.	20th	Same as No. 16 (5747).	VI
43	12148	Mar. 17, 1908	Mar. 17, 1908	Vertex.	Not in labor. Eclampsia. Full term. Justo minor.	Lived.	61st	Homeless	I

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CESAREAN SECTION, WITH DATES, SERIAL NUMBERS, AND DETAILS OF CASES. (*Continued.*)

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
44	12243	Mar. 27, 1908	Mar. 27, 1808	Vertex.	Lobar pneumonia. Moribund.	Died 5th.	.....	Died 14 hours after operation.	VI
45	12249	Mar. 31, 1908	Mar. 31, 1908	Breech L. S. A.	Acquired dilatation of stomach. Naegele pelvis.	Lived.		Anesthesia taken badly. Died 30 minutes after operation.	II
46	12453	Apr. 29, 1908	Apr. 29, 1908	Vertex L. O. A.	Flat pelvis.	Lived.		Died 54th day. Septic endometritis.	II
47	12482	May 1, 1908	May 2, 1908	Breech.	Generally contracted.	Lived.	14th	.....	I
48	12483	Apr. 21, 1908	May 2, 1908	Twins, both vertex.	Eclampsia, 9 1/2 months. Toxemia.	Both lived.		Died on table not in labor.	I
49	12531	May 8, 1908	May 8, 1908	Vertex L. O. A.	Justo minor flat.	Lived.	26th	Inspiration pneumonia.	I
50	12583	May 15, 1908	May 15, 1908	Face R. M. A.	Flat pelvis.	Lived.	16th	.....	I
51	12661	May 27, 1908	May 28, 1908	Breech L. S. A.	Nine and a half months. A. P. Eclampsia.	Lived.	31st	.....	I
52	12938	June 28, 1908	June 28, 1908	Vertex L. O.	Transverse flat, generally contracted.	Lived.	13th	.....	IV
53	14178	Dec. 9, 1908	Dec. 9, 1908	Vertex L. O. A.	Transverse, flat generally contracted. Attempted high forceps.	Lived.	24th	.....	VIII
54	14565	Jan. 29, 1909	Jan. 30, 1909	Vertex L. O. A.	Justo minor pelvis.	Lived.	15th died.	Returned to hospital 29th day, mural abscess, operation. Died 39th day.	III
55	14637	Feb. 10, 1909	Feb. 10, 1909	Vertex R. O. A.	Carcinoma rectum and sigmoid.	Lived.	14th	.....	VIII
56	14731	Feb. 11, 1909	Feb. 20, 1909	Vertex L. O. A.	Flat rachitic pelvis.	Lived.	14th	.....	I
57	15479	May 19, 1909	June 6, 1909	Vertex.	Neoplasm of cervix.	Died 4th day.	16th	Hemophilia neonatorum.	III
58	15575	June 12, 1909	June 19, 1909	Vertex R. O. A.	Flat pelvis. Vent. fix.	Lived.	20th	.....	V
59	16500	Oct. 31, 1909	Oct. 31, 1909	Vertex L. O. A.	Fifth Cesarean.	Lived.	16th	Same as No. 16 (5747).	VII
60	16558	Nov. 4, 1909	Nov. 12, 1909	Vertex R. O. A.	Flat pelvis. Placenta previa margin.	Lived.	43d	No in labor; persistent bleeding.	I
61	16890	Jan. 4, 1910	Jan. 4, 1910	Vertex L. O. A.	Generally contracted.	Lived.	12th	.....	I
62	16961	Jan. 12, 1910	Jan. 15, 1910	Vertex R. O. A.	Exostosis back of symph.	Lived.	12th	.....	I
63	16977	Jan. 17, 1910	Jan. 17, 1910	Vertex L. O. A.	Lateral contracted pelvis.	Child died 54th Atelectasis.	59th	Operation 25th day to cure old umbil. hernia.	III
64	17107	Feb. 4, 1910	Feb. 5, 1910	Vertex L. O. A.	Not in labor. Eclampsia, 8 1/2 months.	Died 23d.	Died 2d.	.....	I
65	17113	Feb. 6, 1910	Feb. 6, 1910	Vertex L. O. A.	Rachitic pelvis.	Lived.	12th	Second C. S. Same as No. 29 (10100).	II

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CESAREAN SECTION, WITH DATES, SERIAL NUMBERS, AND DETAILS OF CASES. (*Continued.*)

Case No.	Conf. No.	Date of admission	Date of confinement	Diagnosis	Indication	Result, child	Day of discharge	Remarks	Para
66	17128	Nov. 6, 1909	Feb. 10, 1910	Vertex L. O. A.	In labor 48 hours. Small rachitic pelvis.	Lived.	25th	Becoming exhausted, p. 120.	I
67	17214	Feb. 19, 1910	Feb. 23, 1910	Vertex R. O. A.	Ninth months. Not in labor. Justo minor pelvis.	Died 18th.	Died 7 hours.	Streptococcemia; cerebro-spinal meningitis.	I
68	17310	Feb. 26, 1910	Mar. 10, 1910	Vertex R. O. A.	Rachitic dwarf. Second C. S.	Lived.	12th	Same as No. 22 (7391).	II
69	17493	Mar. 31, 1910	Apr. 5, 1910	Vertex R. O. A.	Rachitic contracted pelvis.	Lived.	12th	First child craniotomy.	II
70	17514	Apr. 9, 1910	Apr. 9, 1910	Vertex L. O. A.	Rigid cervix; living child. Eclampsia. Not in labor.	Lived.	24th	.....	I
71	17562	Apr. 18, 1910	Apr. 18, 1910	Vertex R. O. A.	Flat pelvis. Second C. S.	Lived.	12th	Same as No. 35 (11000).	II
72	17603	Apr. 26, 1910	Apr. 26, 1910	Both vertex; twin.	Eclampsia. No sign of fetal life. Twins.	Still-births.	19th	.....	I
73	17702	May 16, 1910	May 16, 1910	Vertex L. O. A.	Contracted pelvis.	Lived.	11th	.....	II
74	17780	June 1, 1910	June 1, 1910	Vertex R. O. A.	Contracted inlet. Exostosis. Same as No. 50 (12583).	Lived.	17th	Rupture of uterus through old Cesarean scar. 2d Cesarean.	VIII II
75	17856	June 20, 1910	June 20, 1910	Vertex R. O. A.	Rachitic dwarf.	Lived.	13th	.....	III
76	17938	Mar. 14, 1910	July 11, 1910	Breech.	Rachitic pelvis, 2d C. S. Same as No. 31 (10487).	Lived.	15th	.....	I
77	18101	Aug. 17, 1910	Aug. 18, 1910	Vertex L. O. A.	Long labor, 90 hours, rachitic flat pelvis.	Lived.	6th	Midwife. Septicemia; (Staphylococcemia.	I
78	18109	Aug. 18, 1910	Aug. 18, 1910	Vertex R. O. A.	Contracted pelvis. Atresia of vagina.	Died 2d day.	12th	Hydramnios. In labor 10 hours. Child premature.	

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DISCUSSION ON THE PAPERS OF DRS. CARSTENS, HUMISTON AND DAVIS.

DR. E. GUSTAV ZINKE, Cincinnati.—Mr. President: It is very difficult for me to open this discussion because the authors of the papers have laid themselves so little liable to adverse criticism that one scarcely knows how to begin. Especially does the last speaker coincide with the opinions that I entertain with reference to Cesarean section. He has voiced my sentiments thoroughly when he says that the operation has obtained a wide range of practice which will probably increase as time advances. But the operation will not be performed as often in the future as it now is in cases of puerperal eclampsia unless it be entirely in the interest of the child. I have taken an advance ground with reference to the utility of Cesarean section. The operation is safe, if it is performed under proper surroundings, if the patient is properly prepared, and the obstetrician or operator well qualified to perform it. Notwithstanding this, the operation must not be looked upon lightly. It should always be considered a serious procedure, for in every instance it means the opening and the exposing of the abdominal and the uterine cavity; and, at best, even under the most favorable circumstances, the possibility of sepsis can never be entirely excluded. Therefore, the operation deserves as much earnest consideration as it ever did in the past. No one who has followed the history of obstetrics will doubt for a moment that operative obstetrics of to-day is entirely different from that of thirty or even of twenty years ago. The indications for the various obstetric procedures are now well defined. We work with greater certainty and with more assurance. The so-called compromise operations, the high application of the forceps, the induction of premature labor, and prophylactic version, every one of which was devised to overcome certain obstacles in the parturient tract, have received renewed and careful consideration within recent years. The high application of forceps in narrow pelvis certainly ought to be condemned. Ohlshausen has well expressed it when he said, "the high forceps fit the narrow pelvis like the prize fighter's fist upon his opponent's eye." I agree with the last speaker that a timely Cesarean section, in the absence of sepsis, is certainly to be preferred to the high application of the forceps in cases of narrow pelvis. The induction of premature labor has still a maternal and a well marked fetal mortality, both of which may be lessened by a timely Cesarean section. But, recognizing the dangers of Cesarean section, even under the most favorable circumstances, a competitive operation has arisen within the last few years—hebosteotomy. I have referred to this time and again, and, with your permission, will repeat what I have said on former occasions. While splitting of the bony pelvis does not appeal at once to the obstetrician nor to the general practitioner, and less to the laity, it is an operation which has come to stay. We cannot shut our eyes against solid facts. If a certain treatment of

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20,000 cases of narrow pelvis furnishes a maternal mortality of only 0.1 per cent. and a fetal mortality of only 4.5 per cent., we must admit that whatever this management of narrow pelvis may have been, it must be good. This so-called "new theraphy" of narrow pelvis has resolved itself into this: the *test of labor, hebosteotomy and Cesarean section.* If the contraction or the deformity be not too great, and nature is unable to complete the act of labor, then hebosteotomy should be performed before the soft parts have been injured. The case is one for hebosteotomy if the anteroposterior diameter of the inlet is not less than 7.5 cm. and the passenger not out of proportion to the passage increased by the operation. When the contraction is below 7.5 cm. Cesarean section is performed. With this new management of narrow pelvis. We find that 80 per cent. of all the women have delivered themselves, spontaneously, of living children and without injury to themselves or their offspring. Fifteen per cent. were delivered by aid of hebosteotomy, and 5 per cent. by Cesarean section. This speaks for itself. I do not know of anything in the history of midwifery more convincing than this.

DR. HENRY SCHWARZ, Saint Louis.—I have little to add to what has been said. Of course, I was very glad to listen to the various papers, and am deeply grateful to Dr. Davis for the information which his paper contained. I am pleased to take this occasion, like I have done before, of correcting an historical error with regard to the so-called Saenger operation. Saenger performed no Cesarean section before he published a case in May, 1882, in the *Archives für Gynäkologie*, but a monograph on Cesarean section based on animal experimentation was published in 1882. In 1881, when I was sent to Heidelberg, Professor Kehrer took charge of the institution, and at this time I had the opportunity to see his method of Cesarean section. The danger of Cesarean section in those days was due to our faulty way of suturing. We sewed in one layer. Kehrer conceived the idea that if we could get exact closure of the wound by putting in muscular sutures, not including the mucosa, and then folding the peritoneum to get the peritoneal surfaces against each other, putting a second suture over the first one, and likewise by making an incision at the angle of flexion near the height of the inner os, we might prevent the escape of lochial flow into the peritoneal cavity, which was the source of danger at that time. Our opportunity came the first of September of that year. We performed the operation and both the lives of mother and child were saved. We performed two more operations in April, 1882. Then the manuscript was sent to the editors of *Archives für Gynäkologie*, one of whom was the father-in-law of Dr. Saenger. The manuscript was somewhat delayed in its publication. Saenger's monograph appeared during that time, and Leopold, acting on the paper of Saenger, performed the first operation which received the name of Saenger method. Saenger himself in later publications, contained in the *Archives für Gynäkologie* the same

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year, 1882, gives Kehrer due credit, and it is one of those cases where great minds ran in the same channel. The only exception I wanted to take to Dr. Humiston's paper was his statement of making central placenta previa an indication for Cesarean section. I would like to ask him how he knows he has a case of central placenta previa before he has complete dilatation of the os? We cannot tell what kind of placenta previa we have until the os is dilated—at least, I cannot; nor is it, in a case of placenta previa, ever necessary to do Cesarean section. The operating surgeon and the operating obstetrician are liable to get statistics mixed. The danger of placenta previa is not as great, as it is stated in these various statistics. I always think of the way in which placenta previas and elampsias must be met by the practitioner. These practitioners know that Cesarean section is out of the question, and to advocate in these cases that Cesarean section should be performed puts the general practitioner at a great disadvantage, and it is certainly very disheartening gospel for us to preach.

DR. WILLIAM G. DICE, Toledo.—I have been interested in looking up the statistics of Cesarean section and the relative operations in contracted pelves in the course of the preparation of a paper, and I think Williams probably gives the latest statistics. He quotes Schläflie as reporting 700 cases by 142 operators with a maternal mortality of something over 9 per cent. and a fetal mortality of 4.5 per cent. Williams himself selected eight operators, but just what actuated him in selecting these particular eight I do not know, but in the cases operated on by these eight selected operators, the maternal mortality was 1.2 per cent., and that of the children 4 per cent. Those who are enthusiastic over pubiotomy as an operation seem to forget that it is an operation where the mothers cannot be taken always to expert operators, but must go to the general operators in our small cities, and, consequently, this would increase materially the general mortality statistics as compared with those which operators in our large cities would get. In a pubiotomy, we must also remember that the child has to be brought down after the pubic bone is cut, it must be gotten through the parturient canal, and it may require the application of high or medium forceps, and you may have to deal with complications that come from these things.

So far as high forceps and version are concerned, Vorhees in quoting the Sloane Maternity statistics gives the maternal mortality of 4.3 per cent. for version, and a fetal mortality of 4.9 per cent.; whereas for high forceps the mortality to the mother was 1.8 per cent., and for version 2.1 per cent. There were lacerations of the perineum in something over 40 per cent. of the cases.

With regard to Cesarean section, it seems to me the important thing is for these patients to get to the operator early. Reynolds in analyzing 289 cases found in the cases operated on early—by

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that I mean an elective Cesarean section, or one after labor has gone on sufficiently to secure dilatation of the cervix—the mortality was 1.2 per cent. In the cases where labor had gone on still longer, and was attended by great pain, the mortality was 4 per cent.; whereas, the late cases showed a mortality of 12 per cent. Vorhees in a recent article in reporting 172 Cesarean sections by twenty-seven operators, found a mortality of 4 per cent. The one thing which the Fellows of this association should do is to impress upon the general practitioner the importance of diagnosis of contracted pelvis before the patients come to labor and of bringing them to the surgeon at an early period.

DR. ROBERT T. MORRIS, New York.—In emptying the uterus for eclampsia, I would like to ask at how early a stage of pregnancy has that been done, and if this internal secretion was sufficient at the time to prevent dangerous hemorrhage from the site of the placenta?

DR. DAVIS.—We have done Cesarean section in these cases at about eight and a half months. We have seen no more hemorrhage in them than in those where the operation was done at term. The only reason why we should wait for term is that we avoid the delivery of a premature child.

DR. J. GARLAND SHERRILL, Louisville.—This subject is one of considerable interest to me, although my experience has been small as compared with that of some of the gentlemen who have spoken. I have had four cases of Cesarean section with a *nil* maternal mortality and with a fetal mortality of 25 per cent. In one case the death of the fetus occurred a short time after birth. In this case the operation was done in the latter part of the seventh month, and the child was delivered alive, but was not cared for until I had completed the operation on the mother.

With reference to hebosteotomy, I must say that this operation, when it first came to my notice, did not appeal to me at all. I usually prefer a clean Cesarean section as a practical procedure. It seems to me there are no real indications for the so-called high operation. I see no reason why the operation should not be done at the most prominent point, and that is below the umbilicus, and the operation can be done safely and quickly, and there is no danger from hemorrhage occurring in drawing the uterus to a higher point. It is more accessible, and you can get at the uterus readily.

One of the chief indications for Cesarean section has been ignored to-day to some extent, and that is the fetal morbidity. In patients who are delivered by hebosteotomy or by waiting, 80 per cent. of the cases are delivered by the women themselves by waiting, but we have a fetal mortality the result of that delay, and we have a morbidity from hemorrhages into the brain which occur during delivery, and various injuries to the children may occur. I think we ought to consider the damage done by the

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pressure which is produced when the child is passing through the pelvis.

DR. F. W. SEARS, Syracuse (by invitation).—I want to speak of one case in which we got a better result than we expected. It was a case of cancer of the cervix involving a part of the vagina in such a way that labor could not go on. This condition was not recognized until the woman came to labor. This case I saw in consultation 7 miles from the city with another practitioner and found that she had been in labor twenty-four hours. It was impossible to get dilatation of the cervix. She was brought to the city, taken to the hospital, and I did a Cesarean operation. Her recovery was absolutely uninterrupted. She had no more trouble than would occur from normal labor. She left the hospital on the sixteenth day after the operation, drove home with her husband, carrying the baby in her arms. The baby is now four and a half years old, and is perfectly well. This case illustrates that even under the most unfavorable circumstances we do sometimes get a perfect result. The mother lived nine months, the cancer having developed to such an extent that there was no chance of removing it or giving her relief.

DR. ELLIS W. HEDGES, Plainfield.—I want to record a case illustrating how a patient in a desperate condition may be relieved by Cesarean section, and to speak also of the advantage of the lower incision. A woman was brought to me who had been in labor for three days. The first day she was left alone. She had a narrow pelvis. The second day she was anesthetized, and her attending physician for several hours made attempts to extract the child. The third day he got two other physicians who made similar attempts for several hours, but did not succeed, and at the end of the third day she was brought to the hospital. It seemed impossible for certain reasons to do a craniotomy, and so we rapidly got her on the table, although her condition was bad, and in doing a Cesarean section we found the uterus had been punctured on one side low down near the neck with some hemorrhage from the wound, and there was also a puncture into the broad ligament, with a large hematoma. We closed up the tears, and, though the woman afterward had an abscess in the broad ligament which required vaginal section, she got well. The child was dead. With a high incision it would have been impossible to have dealt successfully with the rupture in the uterus or to have closed the wound in the broad ligament.

DR. THOMAS B. NOBLE, Indianapolis.—I would like to say a word or two on this subject. It is very evident that Cesarean section is going to occupy a more prominent position in obstetrics than heretofore, and for that reason it is going to stay, or its stay will depend on certain details that pertain to success. It is the attention to the little details in technic that make for good or evil, for weal or woe in our practice. This summer, within forty-eight hours, I had two cases of this character, and

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they presented this interesting difference: one was an elective Cesarean section, the time chosen, because it was found that the woman could not be delivered by the natural channel. The next was one in an old woman, with justaminor pelvis, with a very large child, high forceps having been applied, the woman having been in labor forty-eight hours. These two cases coming so closely together presented quite a difference. I found the actions of the uterus very pronounced in their difference. In the first instance the uterus delivered itself immediately upon incision; the fetus and membranes burst through the wound dry. The uterus contracted at once, and very little hemorrhage was present. This uterus had not been tired out by efforts of delivery. The second woman had heen in labor forty-eight hours, and we had a tired uterus. There was no effort on the part of the uterus to deliver itself when the incision was made. The hemorrhage was quite sharp. In both of these cases the placentæ were situated anteriorly and we had to go into the placental site. The second case was very much disposed to bleed during the operative procedure and secondarily thereto, so that we had to watch the uterus through the open abdomen, and we had to compress it occasionally, which we did, and so we coaxed it along and worked with the uterus until it was thoroughly contracted and normally placed toward the pelvis.

I do not see a very great advantage in the high abdominal incision over the low one. My experience with Cesarean section has heen confined to four cases, and those are few as compared to the number which some of you gentlemen have had, and I am not here to advise those who have had a much wider experience than myself, but it seems to me, we have some individuals who have an umbilicus that is higher in the world than others, and we know some are much lower. There is a difference in distance between the umbilicus and symphysis in individuals, and so in an individual whose umbilicus is away down low it may do the high operation to advantage, but in a case in which the umbilicus is situated high, it would carry us, if we went above the umbilicus, entirely too high to take care of it and to watch the uterus which may bleed, as in Dr. Zinke's case, and which cost him the life of the patient. Again, if the peritoneal surfaces over the uterus be properly united, and the parietal and visceral layers properly approximated, we need not have any fear of union between the two, and if we get it what does it amount to anyhow. Relative to pressure on the uterus afterward, I feel that we ought to be careful of these uteri that they are dry, and that they remain dry afterward. Some of these uteri bleed very easily, and I cannot get away from the old idea that a good well-fitting abdominal binder has its influence, which, if intelligently applied, cannot do any harm, and it may do some good.

DR. CHARLES N. SMITH, Toledo.— I wish to report one of my nineteen cases of Cesarean section with is a rather unique case of

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double vagina, and ask permission to have the report appear in the transactions. (Permission was granted.)

DR. E. GUSTAV ZINKE, Cincinnati.—I simply wish to correct a wrong impression which I seem to have made upon Dr. Schwarz. In the so-called test of labor the child is not hurt in any way. You must not wait that long. If the child's head has been damaged, and the soft parts of the mother, too, have been hurt, that is another question. Hebosteotomy or Cesarean section must be performed before harm has been done to mother or child.

DR. LEWIS C. MORRIS, Birmingham, Alabama.—I have enjoyed listening to this symposium very much, and especially the paper of Dr. Davis with reference to the high incision. It seems to me, the location of this high incision is an ideal one for those cases in which there is no infection and in which no radical Porro operation is indicated, so that in deciding between the high incision or the ordinary incision, that is the low incision, we should determine before hand whether the case is infected or not, as this is very important. In infected cases we may have a Porro operation to do, or we may have to drain, and in such cases the low incision is certainly the incision of choice. I have done seven Cesarean sections with a mortality of 1 per cent. to both mother and child. In one of my cases that got well there were adhesions between the incisions in the skin and uterus, and the lower abdominal incision ruptured on the eighth day.

DR. MAURICE I. ROSENTHAL, Fort Wayne.—There is one danger following Cesarean section to which I wish to call your attention, and that is the danger of rupture of the uterus in subsequent pregnancies. This is not only true of Cesarean sections but of other operations on the pregnant uterus, as for instance a myomectomy during pregnancy. I did a myomectomy for a young woman who was five months pregnant, and I was very much concerned until she was delivered for fear she might have a rupture of the uterus, and I was prepared in that case to do a Cesarean section, if necessary. She was delivered, however, normally. I would like to know what the relative position of the high operation and the low operation is in reference to the danger of rupture of the uterus during subsequent deliveries.

DR. J. H. CARSTENS, Detroit (closing the discussion on his part).—There is nothing to be said in closing with reference to my own paper, but I would like to take exception to one point in connection with the paper of Dr. Humiston. Why any operator should put in interrupted sutures and take the time necessary to make knots in a Cesarean section, when he closes up the uterus, I cannot see. He can just as well make a running suture right straight through, and have the whole thing done in a few minutes, control hemorrhage, take another suture, and accurately adjust peritoneum to peritoneum, and have the whole thing absolutely closed. This is a simple way of doing it. When I do a Cesarean section I have the assistant grasp the uterus and shove it forward,

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and I cut from the umbilicus down. I never cut above the umbilicus, and open the uterus, and in this way no intestines come down. There is no packing to be done; the assistant keeps the uterus forward; after I take out the child he shoves the uterus forward, and there is nothing which escapes into the peritoneal cavity. I then sew up the uterus. If I take out a fetus, a tumor, or an ovarian cyst, I hold that the lower incision is the simplest and best, and the easiest. I will say another thing: Dr. Zinke said I am an abdominal surgeon, and I could do a laparotomy a great deal quicker than I could do any kind of bone surgery. If you will read the statistics and reports of Leopold on pubiotomy and similar operations you will find that he says pubiotomy is not an operation of choice, and that it should be absolutely discarded, and if a woman cannot be delivered in the natural way the only operation is to resort to Cesarean section.

DR. HUMISTON (closing the discussion on his part).—I will only take a few moments of the time of the association. In answer to Dr. Schwarz with reference to a diagnosis of central implantation of the placenta, I will say that hemorrhage is early and usually quite profuse, and the mortality from version is much higher than the elective Cesarean section, and you save the child where you would probably loose it by version in a case of central implantation of the placenta.

Dr. Carstens, I think, is wrong in stating that he can put in a row of continuous sutures much quicker than he can interrupted sutures, because he will have to make several lays and it will be difficult to make apposition accurately, whereas if you put in interrupted sutures carefully, to avoid the mucosa and place them one-half inch apart, you can make a close approximation of the uterine wall, and then a continuous suture for the peritoneal surface and you have an ideal closure.

DR. DAVIS (closing the discussion).—It is impossible to cover the whole subject and say all that there is to say even in a meeting of this kind; but there are some things I will speak of in closing this discussion, and one is the danger of rupture of the uterus following Cesarean section. In 256 cases reported from the Lying-in Hospital there have been four cases of rupture of the uterus, three of them occurring in the hospital service, and one in another hospital in a patient delivered by Cesarean section in a former pregnancy in the Lying-in Hospital. In every instance these woman neglected to report for a second Cesarean section, and allowed themselves to go on in labor for hours, several of them forty-eight hours or more. Two of them were patients upon whom I had already done one Cesarean section and they returned to my service. These ruptures I saw personally. One occurred in the thinned out lower uterine segment and that might occur in any other case of contracted pelvis which had been allowed to go on in active labor for an indefinite time. The second case was a woman in whom I had done Cesarean section in

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1908. After she had been in labor forty-eight hours in her second pregnancy she applied for treatment, and when the ambulance arrived at her home she refused to go to the hospital. Twenty-four hours later she arrived at the hospital in a carriage, applying for treatment. There was no symptom of rupture. There was no shock or anything of the kind. We operated at once. Upon opening her abdomen, we found a flat blood clot over the lower end of the old uterine wound. A portion of the placenta was protruding very slightly from the wound, and in examining it to see what injury had been done, I was able to open the old wound entirely, with the index finger, so that there was no knife or scissors used in opening up the old Cesarean section wound. These ruptures might occur in any case having contracted pelvis or any obstruction where the woman has been in labor that long. When we consider that there were only four cases of rupture of the uterus in a series of 256 cases, we must conclude that the danger from this condition is not very great.

In cases of placenta previa, where we are called upon to interfere, very often dilatation is incomplete. The placenta so weakens the lower part of the uterus that in dilating we are quite apt to start lacerations of the cervix. These lacerations may not be very extensive, but in trying version and bringing the child down through the cervix, these lacerations may become so great as to amount to a rupture of the uterus, or there may be an actual rupture of the uterus extending up into the broad ligament and opening up the uterine and peritoneal cavities. I have had that experience twice and in order to save the lives of the patients, have done a hysterectomy immediately.

In the case of eclampsia we are dealing with emergencies. These patients are brought to us with active eclamptic seizures. Our best knowledge at the present time is that eclampsia is due to a toxemia connected with pregnancy. We are bound to stop the process, and in order to do that the first indication is to empty the uterus. There is no quicker, no safer way for the mother and child than to do a Cesarean section, by a wound which we have directly under our observation, and can make any length desired, and which we can close absolutely.

In the case of hebosteotomy we still have soft tissue to deal with after the bone has been cut through; we have a contracted pelvis, and we must necessarily injure the child more or less in the subsequent delivery. In Cesarean section of election, where labor has not been long in progress, the children are very much safer than by the most easy normal labor because no pressure upon them has taken place.

As to the High Incision: the first Cesarean section in the Lying-in Hospital service in the series of cases which I report was done in a tenement house in 1893. In this case practically the Saenger method was followed. The result was that we had a long abdominal incision, a long uterine incision, and it took considerable time to close them, and after they were closed the

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uterine wound and the abdominal wound were in apposition, and in healing became tightly adherent. That was repeated in successive cases by different operators. Moreover, a noticable thing in those early cases was that the moment the delivery of of the uterus began, the woman showed decided shock. You cannot eviscerate a woman without shock occurring. There is considerable handling of the uterus. It is exposed to a decidedly lower temperature suddenly; the intraabdominal pressure is changed quickly. This was a condition which we noticed repeatedly until we began to do otherwise. As to the after-results, it is essential that we should deliver these women early, but we are looking for a method of delivering them and restoring them to the condition that they were in before we operated. Formerly, in dressing the Cesarean wound, we used to apply a tight many tailed bandage closely over the abdomen; that resulted in placing the abdominal wall directly against the uterine wall and holding it there tightly so that adhesions were inevitable. It has been said, supposing we do get adhesions? If we can show some cases where adhesions do take place for a long distance between the uterus and abdominal wall, where the uterus is held high up in the abdomen, resulting in dragging pains, and almost invalidism, and in case of subsequent operation, we had to deal with those adhesions, we present a condition which is very undesirable. In at least two of the reported cases the intestine has been caught in these adhesions. Once intestinal obstruction took place; the intestine was caught in these adhesions and we were obliged to operate in an emergency. In another case I assisted Dr. W. A. Morgan, a co-worker and attending surgeon on our division, in doing a second Cesarean section. The first had been done elsewhere and the long median incision had been used. Dr. Morgan was dissecting through the upper part of the old cicatrix as carefully as possible, and with all the care he had used he came down upon the intestine and cut through two layers of the gut for about an inch before he realized that it was included in the adhesion. The high incision above the umbilicus should, as a rule, be a small one, and if it is not large enough it should be made larger. I would not be understood as saying that we should restrict it to 8 or 10 cm., make it 20 cm. if necessary, but we find 8 to 10 cm. is large enough, and with a small incision there is very little danger of the escape of intestine and not so much chance to handle the abdominal contents. We may handle the peritoneum with perfect safety, but if we can avoid it, it seems to me it is a decided gain to do so.

As regards the position of the umbilicus, there are some cases in which the umbilicus is so placed that it would be foolish to try to make an incision above it. We see women with broad abdomens, with a broad spreading uterus, where the fundus comes barely to, or very little above the umbilicus. It would be absurd to say we must go above the umbilicus in order to

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carry out the technic in such cases. In those cases we make the incision where it fits the situation best.

As for the continuous suture, one idea seems to be that we should make haste in these operations; that time is an important factor. I do not see why it should be so. We do not find it ncessary to operate with great speed in these cases. We believe in the interrupted suture because it does give firm coaptation of the muscles and holds them in place. The continuous suture is subjected to the change of contraction and relaxation of the uterus in a way that the interrupted suture is not. One more thing about the interrupted suture; when we begin to suture the uterus we tie the sutures as they are laid, at least two or three of them, and we find by so doing enough uterine contraction is induced in the majority of cases to check the hemorrhage. We can close the wound quicker, that is, to place all sutures, and then tie them if we do not have hemorrhage in mind.

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INTUSSUSCEPTION IN INFANTS.

BY
HERMAN E. HAYD, M. D., M. R. C. S., ENG.

(With two illustrations.)

UPON looking over the transactions of our Society, since its inception, I find there have been but two papers published upon this important subject, and those were contributed by Dr. Henry Howitt of Guelph, Ontario, in 1894 and 1898. Dr. Robert T. Morris of New York , also gave, in 1898, a demonstration upon the production of intussusception in rabbits by applying a little carbonate of soda to the exposed ileum. It seems strange that an association of active workers, and many of them general surgeons connected with hospitals, which have a large children's department, should have seen so little of this terrible malady, and could have passed by unrecognized its sudden and dramatic symptomatology.

I believe, with other reporters in this field of work, that this condition is not uncommon but, coming, as it does, in young infants who are so frequently the subjects of gastroenteritis and ileocolitis, the symptoms are often wrongly attributed to these diseases. However, when once seen and diagnosticated by the intelligent medical practitioner, the picture is not easily forgotten, and so impressed is he with his first case that he very soon finds others. This fact has been demonstrated in the experience of many surgeons, as it was with Dr. Howitt who reported seven cases, three of which came from the same medical man. My case came to me from Dr, Nelson G. Russell who diagnosticated a second one inside of six months, and both were successfully operated.

It is interesting to study the surgical evolution of this subject. Intussusception in infants was recognized and accurately described even in ancient medical literature and, quoting from Clubbe's monograph, "The clear and minute description of the mechanism and anatomy of intussusception by John Hunter could hardly be improved upon at the present day," yet it remained for Mr. A. A. Barker, in a paper in 1888, to first put the treatment of this subject on a rational basis.

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Mr. Johnathan Hutchinson operated successfully a case in 1871, and yet in 1892 Mr. Hutchinson says, in an article published in the *Archives of Surgery*, London, vol. iv, "If the patient be an infant, say under two years of age, it will be well to be content with repeated attempts by injection. The results of laparotomy in infants have been so almost invariably fatal that it is safer to trust to other measures." Yet Clubbe, in his 1908 edition, Introductory Chapter on Intussusception, says that he personally has operated upon 120 cases, with forty deaths, a mortality of 32.2 per cent. In the last twenty-four cases he had only three deaths, a mortality of 12.5 per cent., and I have recently seen a note in one of our medical journals that his last series was still more encouraging, owing to a better knowledge of the subject in his territory by the medical man, an earlier diagnosis, and an increased confidence in the brilliant achievements of modern surgery.

The most frequent spot for an intussusception is in the cecum, at the caput ceci, or in the ileum, a few inches above the cecum; but it can take place in any portion of the intestinal tract, from the duodenum to the rectum. Many different classifications are made, but these divisions are of more pathological than clinical interest, since it is impossible to make a diagnosis of the exact type from any special signs or symptoms which ordinarily present themselves, or even upon inspection, until the mass is reduced.

The ileocecal and the ileocolic are the types which concern us most, since they occur most frequently in infancy, are very acute in their development, involve quite often a very large section of bowel, and are rapidly fatal, from the completeness of the bowel obstruction. The ileocecal occurs at the ileocecal valve and the valve is found to occupy the apex or lowest point of the intussusceptum; sometimes within a few hours the greater portion of the colon is involved and the apex of the tumor appears at the anus. The ileocolic resembles the ileocecal and is frequently confounded with it. It differs in having a few inches of the lower end of the ileum invaginated through the ileocecal valve, but in a few hours, owing to the tenesmic efforts induced, the cecum is forced into the colon and its after-course exactly resembles that of the ileocecal (Howitt).

The colic and the enteric forms are not very acute, and seldom produce complete obstruction, because they involve only a small portion of the bowel.

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There are many explanations offered as a cause for this interesting pathology. D'Arcy Power believes that it is mostly the result of anatomical conditions, and occurs when the colon is considerably larger than the ileum and when it is unduly moveable, owing to a long, lax mesentery. Others believe that the exciting factor is more physiological and is the result of some irritation of the bowel wall which causes a spasm of its circular fibers which reduces at that point the lumen of the gut, and then the small area is forced on by the powerful contractions of the longitudinal bands, until an invagination is produced. Nothnagel says, "While the bowel is performing normal peristaltic movements, an annular and strictly local constriction of the bowels happens to occur. This constriction may be greater than normal and so pronounced that the limit of physiologic invagination is exceeded, and the first degree of pathologic intussusception develops."

Morris suggests, and upon these same grounds, that the toxalbumins and ptomains consequent upon bowel fermentation and decomposition may suddenly irritate the circular muscle-tissue fibers and bring on a violent spasm, as was invariably produced experimentally upon the exposed ileum in twenty to forty seconds after the application of a few grains of carbonate of soda.

The diagnosis should be easily made if one is careful to elicit the very definite history which always attends one of these sudden outbreaks. Given, a baby who may have been previously quite well or had suffered from some bowel disturbance who, upon awakening from sleep, or after nursing, is suddenly seized with acute pain, screams and cries out, draws up its little legs, turns pale and vomits, and in a few hours passes blood, you can be morally certain of an intussusception (Clubbe). The screaming does not last long and afterward the child whines and cries occasionally from the colicky pains. A reaction soon sets in, so that the baby looks very well, and the attendant and family can hardly believe in the possible existence of such a serious affliction. Soon after the first scream the child may have one or two natural movements, but in from two to ten hours, in 97 per cent. of all cases, blood will be passed per rectum.

Often, very early in the disease, one can feel a tumor or swelling high up across the median line or along the left of the navel, and if the finger is inserted in the rectum, blood and mucus will come away on it. No doubt, too much dependence has been

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placed upon the palpable existence of a tumor or sausage-shaped swelling, because in over 50 per cent. of the cases operated upon by Erdmann, no tumor could be felt; even when the abdomen was opened the mass lay so high up under the right and left costal cartilages that the swelling could not be made out by any external palpation. If the case has advanced some hours, the tumor may be large, and then it sometimes can be felt through the rectum by the examining finger, or it may even point at the anus. Chloroform should always be given in making the examination if there be any question of doubt in a diagnosis, because when the child cries and screams and makes its abdominal walls tense a proper examination cannot be made, and furthermore, it is so important to completely establish a diagnosis at the first visit that a necessarily fatal illness may be changed to a reasonably benign one by timely interference. It is surprising to see how young children, even in the early months of life, bear these surgical procedures if not worn out by the suffering and the rapidly developing toxemia associated with this bowel obstruction.

The only condition that an acute intussusception can be confounded with is an acute colitis in cases where the mesocolon is thickened and feels very much like the intussusception tumor. The onset in both is acute, but in intussusception, after a few hours, the obstruction is complete and only foul-smelling blood and slime is passed, whereas in colitis there are frequent motions of feces mixed with the blood and slime. The mass is also larger in colitis, but it can never be felt through the rectum (Clubbe).

Occasionally in an incomplete intussusception, as reported in two instances by Erdmann, where no blood was passed, and only a little mucus came away, the diagnosis would be very difficult and open to doubt.

The treatment of this condition is surgical and, many of our best, most skilful, and most competent men never even attempt any other method of treatment. Mr. E. Owen, of the Children's Hospital, London, says: "I deem it nothing less than a calamity that physicians every now and then manage to chase back an intussuscepted piece of bowel by using an enema."

Mr. Clubbe, who has had such an unusual experience in the treatment of this disease, places the little patient on the operating-table and prepares for an operation. Chloroform is given and an injection of about 16 ounces of olive oil or salt solution is

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made into the rectum, and only if every bit of the tumor disappears he sends the patient back to the ward; but if, in six hours, there is the slightest return of a swelling, or any of the symptoms of the disease, he operates at once. He says he has been successful in reducing only 14 out of 138 cases, 10.8 per cent. If in the hands of such a skilful diagnostician, and such an experienced and astute observer, the irrigation treatment effects a cure so seldom, then this treatment has deservedly fallen into ill favor.

Erdmann who has also had a large experience, having operated upon forty-seven cases of all varieties and with all kinds of complications, condemns the irrigation as impractical and too uncertain. Evidently the risks of failure, with reduction by irrigation and insufflation, are so frequent and the possibilities of error in assuming a reduction to have taken place are so great and the manifestly dangerous complications that result from a few hours' delay so imminent that an operation becomes imperative just as soon as a diagnosis can be made. However, most surgeons agree that an injection should be given at the time of operation, not in the hope of effecting a complete reduction of the invagination, bnt with the object of reducing some of it, so that the subsequent manipulations when the abdomen is opened are more easily accomplished, because, in many cases, when the intussusceptum has engaged a large part of the transverse and even the descending colon, it is exceedingly difficult to reduce it without this preliminary irrigation, as the injection usually replaces some of the mass from its intussuscipiens, or sheath.

An incision about 2 1/2 inches in length is usually made on the side where the tumor is most prominent along the border of the rectus or, perhaps best, in the median line, because it is easiest done and there is no bleeding, no vessels or nerves of importance being severed and, as a rule, the reduction is satisfactorily accomplished through this locality. If the tumor can be picked up and the invaginated part reduced, the bowels being retained in the abdominal cavity with gauze pads, this is always done; but sooner than waste any time by trying to hold the bowels back and fruitlessly grabbing a piece here and there, I think it best at once to eviscerate, believing that the dangers of exposing the bowels is infinitely less than the added shock which results from the ineffectual, unnecessary, and awkward handling of the bowels within the peritoneal cavity. The tumor

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is lifted up and gentle pressure is made from below, at the apex of the swelling, between the thumb and fingers, when the inclosed mass usually slips back. No traction, or at least only the slightest amount, is ever made on the entering bowel. The bowel should then be stroked or gently stripped along its natural course for a few inches, to make sure that the reduction is complete and to help on the fecal current and its toxins.

If the case is not recent, the swelling of the inner cylinder is so great that reduction is often impossible, not from adhesions which Clubbe maintains seldom have time to form, but from the blood stasis and infiltration of the parts with serum and exudates. Here a resection of the part is often necessary, but unfortunately it is nearly always a fatal procedure. Sometimes the bowel, here and there, gives way during the efforts at reduction, and a number of superficial tears take place. These should be sewed up with fine catgut sutures. Often the bowels are so distended with gas that they cannot be pushed back into the belly cavity, and occasionally it may be necessary to make a small incision into one of them to effect reduction. However, it is surprising to see how easily these distended coils can be returned if the edges of the incision are hooked up by a tenaculum forceps, one on each side, and the little one be lifted up from the table from these two points while the assistant, with soft gauze pads, gently pushes the bowels back. Salt solution and warm pads are used frequently throughout these manipulations, the omentum is pulled into position and, finally, the wound is closed with through-and-through silkworm sutures, a collodion dressing is applied, then gauze and binder.

It is well, before closing the abdomen, to pass the fingers about in various directions to be certain that a second intussusception has not been overlooked, since multiple invaginations are not infrequent. A little morphia, 1/100 to 1/50 of a grain, occasionally should be given, or small doses of paregoric if the stomach will bear it, to quiet pain and bowel peristalsis and to relieve shock; also such medicines and stimulation as may be expedient. When the vomiting has subsided, a little albumen water can be taken and the child can be given the breast, or some suitable and properly diluted food.

The history of my case is as follows: Margaret W., age three months, three weeks and three days, was operated on September 20, 1909, at 11.30 A. M., about twelve to fourteen hours after the onset of the trouble. The history is classical. She was a partly

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breast- and partly bottle-fed baby and had been under the care of Dr. Nelson G. Russell who had prescribed various combinations of foods, because of the colicky condition always complained of. On the 19th of September, 1909, about 11 P. M., the mother telephoned him that the baby had awakened in terrible pain and was screaming as if in agony. As the family lived some miles from the doctor's office, and as he had changed the food that day, he naturally thought the attack was like many previous ones, and he was content to prescribe a dose of castor oil

FIG. 1.

and paregoric. On the following morning he made an early visit and at once diagnosticated intussusception.

I saw the baby with him about 11 o'clock; she was lying on the bed, awake, with her thumb in her mouth and evidently not in any great distress, but occasionally she winced and cried out as if suffering from colic. There was no fever, nor distention, but upon palpating the left side of the abdomen high up above and to the left of the navel a distinct tumor could

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be felt; although none could be made out per rectum, yet blood and slime came away upon the examining finger. An injection of oil was given into the rectum, the abdomen gently kneaded, and the little one was rushed at once by motor car to the German Hospital. Chloroform was administered and then an incision was made along the left of the navel, about 2 1/2 inches in length.

On opening the peritoneal cavity considerable clear fluid ran out. The tumor was at once seen and an attempt was made to

FIG. 2.

reduce it within the belly cavity. In a very few minutes it was evident that this could not be effected, so the bowels were eviscerated, the swelling taken in the hand and pressure exerted from below up. It was some little time before it began to recede, and then only after the finger was slipped into the neck and a gentle stretching exerted on the tight ring. It proved to be of the ileocecal variety, commencing about 3 inches above the cecum and had engaged at least 7 inches of the colon. The inner cylinder, when released, was of a dark maroon color, but the shining peritoneal luster was still present. The appendix was long, very dark, and was in the mass, but it was not removed.

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The mesentery gave way at a few points in the reduction and a stitch or two of fine catgut was inserted at these spots; the bowels were then returned into the belly cavity with some effort, the omentum was pulled over them, and the wound was quickly closed with through-and-through silkworm sutures, collodion was applied, and then gauze straps and binder.

The baby reacted beautifully, and in sixteen hours had a fecal movement mixed with some blood and slime. Salt infusion, one ounce, was injected into the rectum every two hours, and about 1/100 of a grain of morphine was injected hypodermically every third hour. She slept and rested nicely; was given distilled water frequently; then a little albumin water, and then food diluted in small quantities and often. She left the hospital on the ninth day. Dr. Russell assumed the medical management after the operation, and my nephew, Dr. Charles Gordon Heyd, assisted me in the surgical work.

In closing this subject I may say that I am not surprised that many mistakes are made in diagnosis, not alone from carelessness, but really from want of knowledge, since the averge medical graduate never heard a lecture on this important subject and never saw a case during his student years. He is naturally content to call every case, where blood and mucus is discharged from the bowels as acute bloody dysentery and signs a death certificate in forty-eight or seventy-two hours, attributing it to convulsions, or acute colitis, or acute dysentery. Surgeons must report their experiences with this rapidly fatal and yet easily curable affection in the medical journals, also discuss the subject more freely before state and local societies in the hope that a more general knowledge may be disseminated among the rank and file of the busy, practising doctors. They see these little sufferers first and most often, and if they make a quick diagnosis an early operation will cure 95 per cent. or more of those suffering from this disastrous and rapidly fatal disease. Contrast the terrible mortality of appendicitis and extrauterine pregnancy of twenty-five years ago, under medical treatment, with the splendid results of to-day, due in no small measure to the work and teachings of this Association, and we must not rest content until the same claim can be made for intussusception in infants.

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DISCUSSION.

DR. JOHN F. ERDMANN, New York.—Mr. President: I have had forty-seven or forty-eight cases of intussusception in my practice. One was a female, sixty-nine years of age. The ages of the other patients ranged from four months to eleven years, the majority being under four months of age. It is a striking picture to see a young child, in an apparently robust condition, without any history of previous intestinal obstruction, that is suddenly seized with a sharp abdominal pain and in collapse. The subsequent picture is that of a child tossing about on the bed, getting on its knees, and crying throughout the period of time it is under observation. There will be a period of lull, and then a period of pain, and then a period of lull again. The introduction of the finger into the rectum will, upon withdrawal, be covered with blood or bloody mucus, or mucus that has a foul odor to it will come away. In examining for the mass, in my early records, it was found absent in 60 per cent. of the cases; in the later cases it was found in 50 per cent. of them.

In regard to the question of anesthesia, I gave chloroform and recommended it from the fact that it produces less post-operative vomiting. I had a death on the table four years ago, and frequent resuscitations on the table of these little patients has caused me to select ether as the anesthetic. I had no trouble whatever in my last series of eight or ten cases with ether anesthesia.

I do not incise in the median line. I have never done that, and I never incise in the left side. I made the Deaver or Kammerer incision, so as to have the parts in sight, because the greatest difficulty in reduction is the iliocecal valve. You can feel everything with the fingers, and my first investigation is the descending colon. I follow up the descending colon to the splenic flexure, and go from the splenic flexure across to the hepatic flexure, in which region you will often feel the mass involving a portion of the asscending colon or a portion of the transverse colon; in the first hour or two of the obstruction. While the hand is in the abdomen, you follow the colon upward reducing as you go across the transverse colon until you come near the hepatic flexure, then you must invariably dislocate the tumor before you can reduce the mass through the iliocecal valve. Very great care is necessary, if the bowel has been intussuscepted for a few hours, in your manipulations in the region of the iliocecal valve. In the last five or six cases I have gently kneaded this portion of the intestine, reducing thereby the edema, and made the intestine so much more pliable so that reduction took place readily.

In regard to enemas, I do not believe in them other than for a partial reduction of the mass. When you have a case in which you think you have reduced the intussusception, be careful, because you may have reduced it to within an inch or

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two of the iliocecal valve, and that portion may remain unreduced and become gangrenous. I had one case in which the intussusception was of several days' duration. In this case I operated, made an anastomosis with the Murphy button, the child subsequently passed the button, and died later of pneumonia. In my last twelve or fourteen cases—I do not recall the exact number—there were nine cases of intussusception in children under five months of age, and all of them recovered.

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CONSERVATISM IN OPERATIONS ON THE UTERINE APPENDAGES.

BY
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In this brief consideration of conservative surgery of the uterine appendages I shall make no effort to review its quite voluminous literature, but shall confine myself almost entirely to conclusions arrived at as a result of personal experience and observation in this class of surgery. In the first place conservatism is indicated in all women within the child-bearing age requiring surgical interference for diseased adnexa due to causes other than tuberculosis or malignancy.

True conservatism has for its objects:

1. The removal of pathological tissues or the institution of such treatment as will permit these tissues to so far return to normal as to perform their physiological functions.

2. The relief of the various disturbances and symptoms resulting from the presence of disease.

3. The maintenance of the integrity and patency of the Fallopian tubes on one or both sides, in order that their function as oviducts may be retained.

4. The conservation of all of both ovaries, or as much of both or of either as is consistent, with the correction of the pathological condition present. This is necessary in order that the three important physiological functions of the ovary may be retained: first, ovulation, thus rendering conception possible; second, the preservation of the menstrual function, thus avoiding the nervous disturbances and atrophic changes incident to the artificial menopause; and third, the maintenance of the internal secretion or trophic influences over which the ovaries are believed to preside.

5. The maintenance as nearly as possible of the normal anatomical relationship of the ovaries and tubes to each other and to the other pelvic viscera.

6. The covering over as nearly as possible of all raw surfaces,

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resulting from the breaking up of inflammatory processes, thus minimizing the dangers of postoperative adhesions.

Conditions of the appendages, in which conservative work should be considered, may be divided into three classes:

First.—Noninflammatory neoplastic ovaries with normal tubes.

Second.—Noninflammatory pathological condition of one or both tubes.

Third—Inflammatory condition of one or both tubes, with or without involvement of one or both ovaries.

The first class, or neoplastic ovaries with normal tubes, offers a brilliant opportunity for conservative work, not alone for the preservation of the procreative functions, but also that the very important menstrual and internal secretion functions may be retained. There are three varieties of microcystic diseases of the ovary—namely, the corpus luteum cysts and the Graafian follicle cysts which begin in the cortex and the Rokitanski cysts which are distributed universally throughout the whole ovary. Besides these there are dermoid cysts and occasionally an unusually large corpus luteum, or Graafian follicle cyst, will be encountered. There is, lastly, the enlarged sclerotic ovary.

In the microcystic ovaries the indication is as far as possible to puncture all cysts and remove their lining membrane. Frequently these cysts will be so numerous in one portion of the ovary that resection is necessary. This is usually the case in the Rokitanski cysts. In the larger cysts considerable ovarian tissue may be saved near the base of the tumor surrounding the pedicle, which is as a rule the remains of the hilum. In the large sclerotic ovary it has been my custom to resect such an amount of ovarian tissue, as will bring the organ down to the normal size, and the results have been very satisfactory. In plastic work on the ovaries the sutures should be so introduced as to control bleeding, obliterate dead space, and accomplish accurate coaptation.

In the second class of noninflammatory pathological conditions of one or both tubes may be mentioned ectopic gestation and cases of benign neoplasms, usually fibroid. In tubal pregnancy, whether ruptured or unruptured, operative treatment should be influenced, first, by the condition of the tube and ovary of the opposite side. If the opposite tube and ovary are in good condition it has been my invariable custom to remove the ectopic tube. In the event of a crippled tube on the opposite

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side, or a possible double ectopic, if seen after rupture, the margins may be trimmed and coapted with chromic gut, or if seen before rupture the tube may be incised, the products of conception removed and the tube closed with chromic gut just as the uterus is after Cesarean section. After this is done the fimbriated extremity must be split open if it is occluded and mucous membrane stitched to the peritoneum. I have only seen one case of ectopic pregnancy occurring in both tubes, and this woman was so nearly dead from hemorrhage, following the rupture of one tube, that there was no opportunity for conservative work. In cases of newgrowths of the tubes, which are most frequently fibroid, the treatment is identical with that of myomectomy of the uterus—namely, to enucleate the tumor and close the cavity with catgut, being sure that the sutures do not unduly constrict the lumen of the tube.

It is a much more difficult matter to outline any routine method of procedure in the third class of cases, or those in which there is an inflammatory condition present. Here we have to deal with a septic process and the indications are to conserve functionating organs as far as is consistent with the safety of the patient and as the ravages of the disease will permit. The infection in inflammatory diseases of the tubes and ovaries is nearly always from the uterus, although it is possible to occur through the lymphatics, and rarely by an extension from a diseased appendix. By far the most usual occurrence of infection of the appendages is by extension from the uterus of either a gonorrhea or puerperal infection. In the acute stage of either of these infections the chance for conservatism is not so favorable as far as the tubes are concerned, for if they be left patent the infection in the uterus which the occlusion of the tubes had limited would then be poured into the peritoneal cavity. However, as will be shown later by a case report, even in these acute conditions there is an opportunity in properly selected cases for conservatism.

In acute infections of the ovaries, which are nearly always associated with involvement of one or both tubes, it is rarely if ever necessary to remove all of both ovaries, even though they both may contain considerable quantities of pus. An all wise providence has in its beneficence seen fit to provide woman with two of these sacred organs, and has ordained that the very important work of the two can be carried on by one or by even a part of one; consequently it behooves the pelvic

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surgeon to respect this prodigality and generosity on the part of nature and to lend his best efforts to conservatism rather than to ruthless destruction. Even though both overies contain pus, with the general cavity carefully protected from contamination by gauze packs the pus may be aspirated and the ovaries then opened up into the abscess cavity. This should be sponged out with normal salt sponges, and if there be a pyogenic sac it should be either wiped out with a gauze sponge or removed with a curet. This procedure may be carried out on both sides.

In acute inflammation of the tubes, whether due to gonorrhea or puerperal infection, operation should be deferred until the condition has become subacute or chronic, unless conditions should arise which demand interference. If this course be pursued and the proper treatment instituted a large percentage of gonorrheal tubes will get well without operation, while the puerperal tubes will become shut off from the general peritoneal cavity by adhesions and the patient establish more or less of an immunity to the infection, thus reducing very materially the dangers of operation. In operative cases of acute pyosalpingitis the question as to whether an effort should be made to preserve any part of one or both tubes must depend upon several conditions: first, the type of infection, whether gonorrheal or puerperal, the former being more favorable for conservatism; second, the extent and location of the pus and the apparent amount of destruction to tissues produced by it; and third, the general condition of the patient (always assuming that she is within the child-bearing age). In favorable cases where the inflammation involves chiefly the outer part of one or both tubes resection may be done, then a longitudinal incision of from 1/4 to 1/2 inch may be made along the upper border of the stump and the mucous membrane and peritoneum stitched together with fine interrupted catgut sutures.

The same plan of treatment is indicated in chronic inflammations of the tubes and ovaries as has been outlined in the care of acute infections. The chronic or subacute variety, however, offer a more favorable prognosis as regards restoration of function. The most favorable type of chronic inflammatory tubes for conservative work is the hydrosalpinx.

As illustration of the foregoing, I beg to report the following two cases:

CASE I.—Mrs. L. B., age twenty-three, married six years, sterile, although she had had two curetments done, hoping that

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conception might follow. On opening abdomen both ovaries were cystic, one the size of a large grapefruit and the other about as large as a medium-sized lemon. The uterus was retrodisplaced with the fundus resting in the hollow of the sacrum. The tubes were normal and there were no adhesions. The large cyst was so distended that there was apparently no ovarian tissue left; however, a circular incision was made around the base of the cyst about 2 inches from the pedicle or mesovarium and the tumor enucleated. The tissues thus left retracted immediately and could be seen to contain cortical ovarian structure. This shell of ovarian tissue was then whipped together with fine catgut in such a way that the raw surfaces were turned in and dead space obliterated, the result being a mass of normal-looking ovarian tissue as large or larger than a hazelnut. On the other side the smaller cyst was enucleated, leaving about one-half of the normal ovary. The uterine displacement was corrected by Mayo's modification of the Gilliam operation and the abdomen closed in layers. Convalescence was uneventful, and I delivered this patient of a full-term male child eighteen months after her operation.

CASE II.—Mrs. C. W., referred by Dr. Mitchell, age twenty-seven, married seven years, one child four years old, had four miscarriages all of which were self-induced by the introduction of a soft-rubber catheter into the cervix. Patient was nearly two months' pregnant when on August 12, 1909, she inserted a catheter into the cervix. She had considerable pain and hemorrhage and as she thought aborted August 15. Following this she had chills and fever and became quite ill. When seen by me on the morning of August 27, fifteen days after the introduction of the catheter, her temperature was 104° F., pulse 120; she was suffering intense pain in lower abdomen, especially on left side, and the whole lower abdomen quite sensitive and moderately rigid. On vaginal examination the uterus was found fixed and masses filled both sides of the pelvis, that on the left side extending well up above the pubic bone. On opening the abdomen all of the pelvic viscera were glued up in adhesions. The left tube was as large as the wrist and filled with pus from the cornua to the fimbriated extremity. The left ovary was several times its normal size and contained about an ounce of pus. The right tube was adherent to the ovary and in its outer two-thirds was larger than the thumb and contained pus; the inner one-third was thickened as a result of the

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inflammatory process but contained no pus. The left tube was removed *in toto* up to the uterine cornua and the abscess in the left ovary was drained and the sac cureted. The right tube was amputated at the junction of the inner one-third with the outer two-thirds and the adherent fimbriated extremity was dissected off of the ovary. The end of the remaining part of the tube was split open on its upper aspect for about one-third of an inch and the mucous membrane stitched to the peritoneum with fine interrupted catgut.

The upper border of the broad ligament was then sutured so as to cover raw surface and to leave the right ovary and the end of the amputated tube in close relationship. Raw surfaces were covered as well as possible and the incision closed, leaving a cigaret drain in the lower angle which extended down to the bottom of the culdesac. This was done because of the abscess in the left ovary and because in separating the right tube from the ovary it was impossible to prevent some leakage of pus. Temperature and pulse both dropped after the operation and the convalescence was uneventful, the patient leaving the hospital September 14, just eighteen days after the operation, with drainage practically closed. This patient menstruated last on December 15, 1909, not quite four months after her operation and has up to the present time pursued a perfectly normal course of pregnancy. When seen last ten days ago the fetal heart was 132 and the fetus occupied the vertex postition with the occiput to the left, anterior.

CONCLUSIONS.

First.—No woman under forty years old should have all of both ovaries removed except in the presence of tuberculosis or cancer.

Second.—Resection or amputation of diseases parts and plastic work on the tubes will occasionally be followed by conception.

Third.—Even in the presence of infection and more or less involvement of both tubes and ovaries plastic work, followed by pelvic drainage and the Fowler position, may be followed by regeneration.

Fourth.—Radical or sacrificial surgery and conservative or conservation surgery have about the same mortality but a vastly different morbidity.

Fifth.—A very occasional secondary operation may become necessary which might have been avoided by doing radical work.

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DISCUSSION.

DR. ARTHUR T. JONES, Providence.—I have been very much interested in Dr. Morris' paper, and I think he is very fortunate indeed to be able to report to us these two cases of conception ollowing plastic work on the appendages; I mean by appendages more especially plastic work on the tubes, which he did in these cases. I have done considerable plastic work on tubes and ovaries, and I am less enthusiastic at the present t me over plastic work on the tubes, especially, than I was five years ago. I believe that a tube which has once been infected is the same as an appendix that has once been infected; I believe that it is a source of danger to the woman, and where we get an occasional case, as Dr. Morris has of success, after repairing a tube, we get a great many cases that go wrong and that come to secondary operation. The question arises, is it worth while to attempt operation on this occasional case for the purpose of conception, and take the chances in the great number of cases of doing a secondary operation. I believe it is not a good plan to remove the products of ectopic pregnancy from the tube, and sew up the tube and leave it. I believe that the tube should be removed, and the whole of it removed.

A few years ago I was very much pleased with the work of Dr. Francis Markoe, of New York, and the part that appealed to me in his removal of tubes was that he dissected out the tube at the horn of the uterus, not leaving any portion there, because a portion of tube left there is a menace to the patient in the way of further infection, and there is a probability of a secondary operation having to be done to remove that portion that was left. Only recently I did an operation upon a patient who had had a previous operation in which one of her appendages was removed. It had been tied off about half an inch from the horn of the uterus, and although the previous operation had been done something like a year, as I remember it, there was pus in that remaining small portion of tube. Of course the pus was sterile, but, it seems to me, it was a very good culture media and it was a source of trouble in that there were a great many adhesions around that.

My own conclusions are that plastic work on ovaries is very satisfactory, but plastic work on tubes is far from satisfactory, and I have had quite a few cases that have come to secondary operation after plastic work on the tubes, doing, as the essayist has suggested, removing a portion, splitting up the end, whipping it over, and making a new fimbriated end for the tube. If the woman is near the menopause, I feel it is best to remove her appendages rather than subject her to the possibilities of another operation in the course of a year or two. We feel that an operation is a slight thing, and we say to these patients, "If this does not do you good, you can have another operation." Our patients take an entirely different view of that, I think, and it is not a pleasant thing to think of the possibility of a secondary operation. If the woman is young, and has not been fortunate enough to have borne children previously, I do believe we should resort to

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conservatism and give her every possible chance of bearing a child, but if she has been married ten or twelve years and has not become pregnant, and the fault is upon her side, I do not think we should subject her to the possibilities of a secondary operation.

DR. K. ISADORE SANES, Pittsburg.—It seems to me that the degree of conservatism in a given case must frequently depend a great deal upon the degree of anxiety on the part of the patient to preserve the function of reproduction and menstruation. If a woman is anxious to have children, we should give her the benefit of a conservative operation, even if the symptomatic relief may not be complete.

My experience in conservative surgery of cystic ovaries has been that resection of the cystic portion of an ovary is followed sometimes by formation of a cyst in the conserved ovarian portion. Simple puncture and not removal, wherever possible, of the small capsules, seldom if ever was followed by formation of cyst.

We do not practise conservatism on the tube containing an extrauterine pregnancy especially if the other tube is healthy. We cannot be sure that the conserved part of the tube will not be the seat of an extrauterine pregnancy again.

So far as acute inflammatory conditions are concerned, our conservatism consists in leaving the patient alone and await developments.

In severe cases of acute pelvic diseases which demand treatment, we sometimes open the posterior culdesac, pack it with gauze back of the uterus and tubes to protect the general peritoneal cavity from infection through the uterine walls and tubes. If we find the inflamed tubes closed, we open the fimbriated extremity through the vaginal incision and drain the tubes with fine strips of gauze, tying the distal end of the gauze to the large pelvic gauze drain. This procedure is applicable also in gonorrheal pus tubes when they are still movable or slightly adherent. In the firmly adherent tubes, particularly large pus tubes, conservatism consists in opening widely and draining the tubes (salpingotomy). The results obtained are not always good; a secondary radical operation may have to be done. But salpingotomy is only a minor operation and the advantage of doing a secondary radical operation after the preliminary salpingotomy is very great, for we then operate in a much cleaner field and on a patient with a much greater resistance. We have never carried conservatism in laparotomies so far as to save ovarian tissue of an ovarian abscess.

So far as resection of a pus tube is concerned, it does not seem to us to be a safe operation. If we have a pus tube such as gonococcal where the infection is carried through the uterine canal, then to remove the distal portion of the tube, leaving the uterine portion in, is certainly unsafe, especially if we remember that we may find gonococci within the endosalpinx and possibly within the salpingeal walls.

Conservatism should be practised in hydrosalpinx and the

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operative procedures can be well carried out through a vaginal incision. It is seldom necessary to remove a hydrosalpinx nor is it necessary to open the abdomen for it. If there are no firm adhesions a salpingostomy is all that is required. If the tube is adherent the adhesions must be freed first, but if adhesions are too extensive salpingectomy is a safer procedure.

Conservatism in walled off pelvic abscesses that can be reached through the posterior culdesac consists in draining through a vaginal incision. Iodoform gauze for drainage purposes is as good as anything we can use. The primary cause of the abscess if necessary must of course be taken care of later.

In abdominal salpingooophorectomies for adnexal diseases with extensive adhesions, too extensive to have them all covered with peritoneum, we drain the pelvis through the vagina with iodoform gauze, about 3 to 5 yards long, filling up the pelvic cavity so as to cover all the raw surfaces and bringing the gauze out through the posterior culdesac incision into the vagina. This enables us frequently to save a uterus and piece of ovary and thus preserve menstrual function. The gauze is left in the pelvis for about ten days or two weeks and after removal of the gauze we usually find a movable uterus. The patient may occasionally get a rise of temperature while the gauze is in the pelvis. If she does we remove the packing. It is important not to pack too much gauze in the pelvis, not to allow too much of this gauze to project into the vagina and to douche the vagina after the second or third day for the purpose of keeping the vaginal portion of gauze clean. The solution used for the vaginal douche does not get absorbed by the pelvic gauze; stained solutions were tried in the douches for purpose of proving this point and were found not to stain the pelvic packing.

We have been taught and have usually practised complete extirpation of the sexual organs in pelvic tuberculosis. But our experience with three tubercular cases justifies our doubt as to the advisability of complete removal of the uterus and the appendages in cases of pelvic tuberculosis. While performing a vaginal salpingectomy for pus tube which was thought to be of gonorrheal infection, we discovered that the pyosalpinx was tubercular. The patient's husband refused to give the permission for total extirpation of the sexual organs; we therefore performed the salpingectomy expecting in some future time to be called upon to operate again. That was seven years ago and the woman is now perfectly healthy. She has never developed tuberculosis on the other side. Another woman had extensive tubercular involvement of both appendages. At the request of her physician and husband the uterus and one ovary was left in, the patient being a young woman, married only one year. The bowels were studded with tubercules. The pelvic cavity was drained through the vagina. For three months she discharged pus from the pelvis. Two months ago I heard from her that the discharge had stopped; she has gained in weight and

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is feeling well. In a third case there was such extensive involvement of the tubes and ovaries, uterus and bowel that a removal of the pathology was impossible and inadvisable. Nothing was done and the abdomen was closed without drainage. The patient when last seen was in good condition, showing that nature can take care of pelvic tuberculosis provided we put the patient in a condition favorable for stopping the tuberculous process.

DR. HUGO O. PANTZER, Indianapolis.—I can heartily support the views expressed by the essayist. The pendulum swings between the two extremes of oversentimentalism over the race problem on one side, and a surgical ardor born of enthusiasm over surgical results as achieved in the abstract. No doubt, conservatism can be carried too far.

I wish to speak of one, a rare case, revealing possibilities by conservatism, as are not generally entertained. I found at operation two very small sclerotic ovaries in an individual, married seven years in utter barrenness who was very anxious to have offspring. Symptoms of ovarian dysmenorrhea had been present since the establishment of puberty. Seemingly the case held out no promise by conservatism. One ovary was removed. Splitting it in twain, it was found to be sclerosed throughout. The other ovary presented outwardly the same characteristics. In sheer desperation—a hope held that by the removal of the thickened exterior, pressure release would follow and might bring to budding, tissues heretofore constrained and unable to develop—led to a conservative procedure. All of the sclerotic exterior on each side was removed. This left behind a mere jut of ovarian tissue of pyramidal form, about one-fourt the size of the full organ. Three months later I was informed this patient was menstruating regularly, though with pain. Previous to the operation this function was often delayed from one to four months. After some months I received a further report that her condition was again as before—namely, that she had now missed her flow for several months. The patient who lived in an adjoining state was asked to present herself for examination. This disclosed her *pregnant about four months*. The letter written by this woman when she became the mother of a son is the most grateful expression I ever received.

We all feel great distress over deciding in the individual instance what to do. Under like conditions as narrated above, where offspring is greatly desired, I feel that free paring of the thickened albuginea is a warrantable procedure.

DR. ELLIS W. HEDGES, Plainfield.—I think there is one other consideration we should take into account when dealing with pus tubes, and that is the condition of life of the woman. If she is a woman who is a wage earner, who has to make a living to support herself or her family, it seems to me we have to deal with that case in a different fashion from what we would

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do in a woman who belongs to the richer class. Pus tubes recur under conservative surgery, and if we have one of those women whose support depends upon her own work, and we see her coming back time and again, and every time she works hard she gets a lighting up of inflammation of the tube, it is our duty to remove that tube. If, on the other hand, we have a woman who can rest whenever necessary and we can use hot douches and vaginal suppositories, I think we can oftentimes tide that woman over so as to have a comfortable existence.

Dr. Morris' paper was a very thorough, and a very beautiful one, and there is just one point that I want to make in regard to it. However much a woman may want a conservative operation, leaving her the chance of further conception, she certainly wants a normal conception, *within the uterus*. Now, if we amputate the distal end of a tube, with its fimbria, and leave the ovary, function on that side is abolished. But supposing the tube to remain patulous for even a short time, the ovarian product cannot find its way into the uterus, but the spermatozoa may find its way out, and into the abdominal cavity, thus perchance making possible a conception, that might be a very dangerous one.

DR. C. C. FREDERICK, Buffalo.—I do not know if I misunderstood Dr. Lott or not in his statement, but if it is as I understood it, it seems to me it is not right that it should appear in our transactions as the consensus of opinion of this association. It is a well-known fact that resected tubes do functionate. It is a well-known fact that many women have borne children whose tubes have been resected to all degrees from the fimbria down to a little stump of a tube that was not over the thirty-secondth of an inch long. There are many cases where pregnancy has happened where the tube has been cut off at the cornu and tied, and it was not expected the woman ever could become pregnant, but she has. There are a good many such instances on record. I have had five or six cases of that kind, and a good many women have conceived where I have resected tubes and rolled out the mucous membrane to make an artificial stoma so as to keep the tube open, so that it does not seem to me that it is well for the association to go on record as endorsing the statement that a tube whose fimbriated end has been resected never functionates.

DR. LOTT.—May I ask a question? Was this amputation done on both sides?

DR. FREDERICK.—Do you mean where both tubes have been resected?

DR. LOTT.—Yes.

DR. FREDERICK.—It was done on both sides. Where one tube has been taken out, and the other tube has been resected for the purpose of giving function to the tube, pregnancy has occurred.

DR. LOTT.—I see the point you are making; you have one healthy tube.

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DR. FREDERICK.—No. I exclude anything of that kind. If a woman has a healthy tube I make no effort to save the other tube, but it is in those cases where it was necessary to take one tube out. Whenever I take out a pus tube, I always take out a V-shaped piece of the cornu so as not to leave any tube, but in cases where there has been hydrosalpinx, or conditions about the fimbriated end of the tube, necessitating removal, in those cases I have resected the tube and have had pregnancies follow.

DR. A. B. MILLER, Syracuse.—Dr. Frederick meant that impregnation has occurred where both tubes have been removed, and where a portion of an ovary has been left, the ovum has found its way into the uterus regardless of the absence of the tubes.

DR. ROLAND E. SKEEL, Cleveland.—It seems to me that in discussing the question of pelvic inflammation and its proper treatment we should go back and consider some fundamental facts in order to arrive at correct conclusions. One consideration which we need always to keep in mind is that pelvic inflammatory processes should never be considered *in toto* but the etiological factors in the individual case must be borne in mind or we are certain to go astray in our method of treatment. I think it is fairly well proven that the etiology of pus tubes is different from that of acute inflammatory conditions of the ovaries, the former depending very largely on gonorrheal infection and the latter on septic infection; that the transmission of the gonorrheal infection is by way of the mucosa of the uterus to the tubes, while the transmission of the pyogenic microorganisms to the ovaries is largely through the lymphatics in the base of the broad ligaments. When gonorrheal infection of the tube has occurred the fimbriated end becomes closed, the gonococci are retained in their own secretion and in a short time they die and we have left a pus tube which is sterile. On the other hand, the gonorrheal tube may rupture into the ovary and a tubo-ovarian abscess result. Or the ovarian abscess may rupture through the cortex of the ovary and involve the tube, but the essential features nevertheless remain, *viz.*, that tubal infection is usually specific in its origin while the ovarian infection is usually puerperal in its origin. In acute pelvic inflammation due to gonorrhea I am sure that none of us have seen more than a very few patients seriously ill and only an occasional one die and for this reason radical interference during the period of acute inflammation is unnecessary. After the subsidence of acute infection in the gonorrheal process on the other hand I am very doubtful about complete recovery because of the persistence of gonorrheal infection in the uterine mucosa particularly in the cervix from which it can readily extend into the uterine body and thence into the tubes at once reviving the old symptoms.

The indications for treatment would thus seem to be plain, *viz.*, conservative treatment during the acute stage and radical

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extirpation after the acute stage has passed. One of the best reasons for deferring radical interference during the acute stage aside from its additional risk, is that we are likely to be more radical at this time than the condition demands and instead of extirpating closed parts of the internal genitalia which are lined with mucosa, the ovaries are simultaneously removed because they are swollen and congested and look badly; while radical operation at a later stage would remove tubes, and possibly the uterus, but would always conserve some ovarian structure. In primary ovarian infection in which inflammatory processes occur that are staphylococcic and streptococcic in nature, there is no such well marked tendency toward limitations of the infection but if acute abscesses should occur they can be drained through the vagina after which they practically always heal, and if a painful or distended ovary is left behind it can be extirpated at a later date. It would require a very enthusiastic vaginal operator to contend that gonorrheal pus tubes are cured by vaginal drainage. Theoretically such treatment must simply tend to spread the process as the gonococci are then not sealed up in their own secretion and retain their virulence because of this fact. I have always practised conservatism so far as complete extirpation of the ovaries is concerned, and have been equally radical in extirpating gonorrheal tubes and uteri, because the ovaries are the essential sexual organs, while the tubes and uterus having the same embryological origin are of no importance in the body except as organs of reproduction.

There is one point that has not been discussed and that is Dr. Morris' statement concerning the occurrence of ectopic pregnancy in the other tube when one is removed for disease, and there has been considerable agitation about the removal of the second tube when ectopic pregnancy has occurred on one side. Out of approximately forty cases of ectopic pregnancy I have twice been obliged to perform a second operation for ectopic pregnancy in the tube which was left behind at the first operation. On the other hand I have lost two patients that I had no business to lose because I took the time to remove a diseased tube on one side at the time of operating for ectopic pregnancy on the other side. While one dislikes to leave a pathologic tube there are instances in which the loss of time is so serious a matter that fussing with the other tube had better be abandoned.

DR. MORRIS (closing the discussion).—The position taken in the paper was exactly that of Dr. Jones as regards the tubes. The Fallopian tubes have only one function, and that is in transmitting the ovum from the ovary toward the uterus and for the meeting of the spermatozoa, and they are for conception. The only idea I had in view in presenting this paper to you was the preservation of this function. The operation is only indicated in young women in whom conception is much to be desired.

As regards the leaving in of infected ovaries, that point has

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been discussed frequently, and I think Dr. Skeel's remarks on the pathology were eminently apropos. I did not take the position that all pus tubes should be drained and left in. I do think that a portion or maybe all of one tube may be left and drained in the subacute or chronic varieties of puerperal infection. In the gonorrheal infections you can often leave one or both tubes with safety. I have done it time and again and have never had cause to regret it.

In cases of removal of one tuberculous tube and leaving the ovary and tube on the opposite side, there is no objection to that, but in the vast majority of cases you never know you have a primary tuberculosis of the tube until the tube has been submitted to a pathologist for examination. Since we have been submitting our specimens for examination we have come to realize that we have more cases of primary tuberculosis of tubes than we dreamed of in former years. Frequently we have removed a tube on one side; we may have suspected it to be tuberculous, and later have gotten a report of tuberculosis, but we cannot tell in the majority of instances without getting a pathological report whether a tube is tuberculous or not.

Another point Dr. Hedges brings out is very important, and that is that gonorrheal pus tubes are practically universal among negro women, and gonorrheal pus tubes are a most frequent condition among the negroes. In my clinic in the winter time we have a great number of these cases, and my conservatism as a rule does not extend to these women because they are wage earners. In patients in the higher walks of life I carry out conservatism, and in a number of cases, if there are many adhesions or raw surfaces in the pelvis, I do a hysterectomy as well as a salpingectomy.

As regards the removal of both tubes being followed by conception, there are five cases on record where both tubes were removed as well as the ovary at the cornu of the uterus, in which conception has followed. They have been tied off without any effort at preserving the patency of the mucous membrane, and yet conception had occurred.

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INTRAVENOUS INJECTION OF MAGNESIA SULPHATE IN BACTERIEMIA.*

BY

RALEIGH R. HUGGINS, M. D.,

Pittsburgh, Pa.

(With six charts.)

FOR a long time the writer has been interested in the success of magnesia sulphate in the treatment of erysipelas and tetanus. Its use locally in infection has been attended by very gratifying results. In the opinion of the writer there is no better local application than a continuous bath in a solution of magnesia sulphate in the treatment of a rapid spreading lymphangitis, the result of a virulent infection. There has been no rational explanation offered as to how such good effects are obtained when this drug is applied locally. It has been suggested that it is by direct bactericidal action, but this has not been borne out by clinical experience. Others have claimed that osmosis plays an active part, but when we stop to consider that other salts which influence osmosis to a greater extent do not exert the same beneficial action, then it would seem that this is also disproven.

In a study of drugs causing hyperleukocytosis is was determined to find out, if possible, whether magnesia sulphate might act in this manner when administered intravenously. After a careful study in both rabbits and the human, it was decided that it did not produce a regular increase in the leukocytes when thus administered. When given in the presence of infection it appeared in some instances to cause an increase in the leukocytes, but so far as we have gone there is no regular increase and neither is there a decided increase in the polymorphonuclear cells. The presence of a 1 per cent. solution of magnesia sulphate in the culture tube does not inhibit the growth of the streptococcus. In a case of tetanus treated by my friend Dr. Willetts, examination of the spinal fluid previous to the injection of magnesia sulphate showed but one lymphocyte per cubic millimeter. Twenty-four hours later a count showed the presence of 2,000 polymorphonuclear cells per cubic millimeter. I am inclined to

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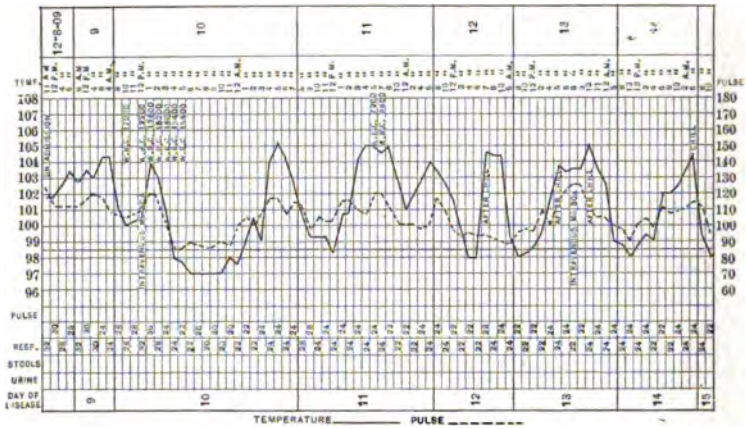
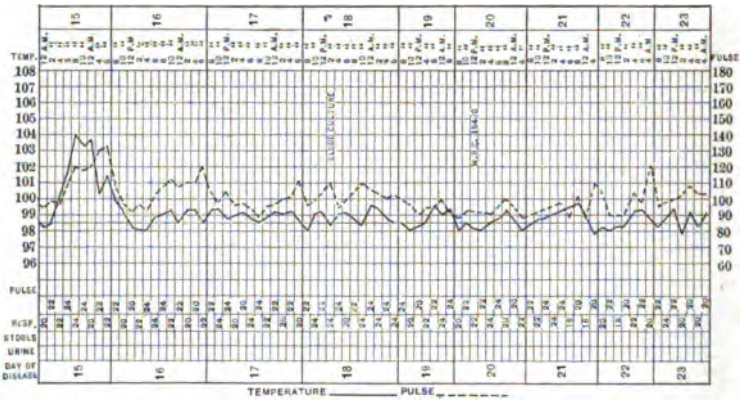
believe that in some manner it assists in raising the resistance of the tissues, but to what action its curative effect is due seems purely speculative.

Many interesting phenomena were noted during these experiments. As demonstrated by Meltzer and Auer magnesia sulphate



CASE I.—CHART 1.



CASE I.—CHART 2.

given to rabbits intravenously or subcutaneously in large doses effects chiefly the respiratory system. In none of these animals did the injection cause an increase of the inspirations in depth or frequency. In other words, they did not seem to excite the respiratory function but, on the contrary, to inhibit it, and as the injection slowly proceeded the inspirations became shorter and

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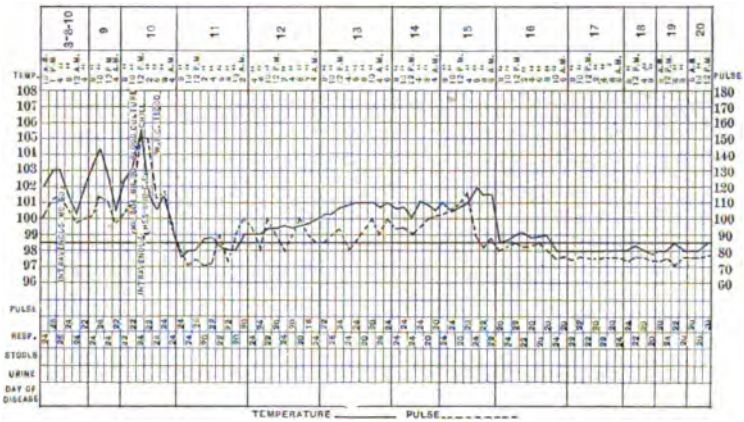
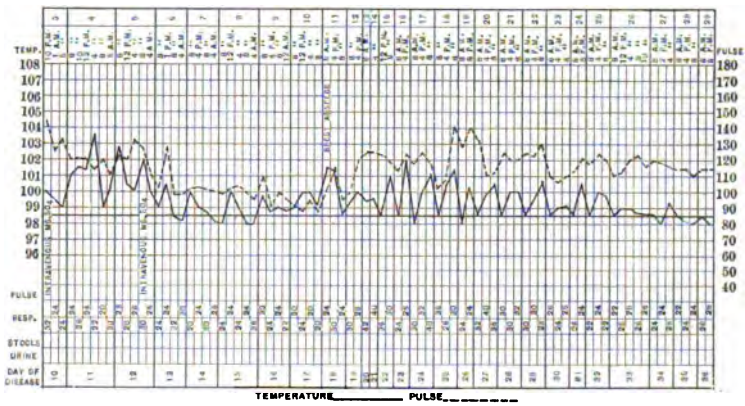
shorter. The most striking and general effect in the intravenous injections of magnesia is the production of anesthesia. It differs from all other anesthetics in that the stage of irritability or excitement is lacking, the state of anesthesia coming on quietly and without any sign of an irritating influence. In the



CASE 2.



CASE 3.

doses given, 1 c.c. of a 25 per cent. solution, death was not produced, but oftentimes it would be followed by embarrassed respiration and light anesthesia.

The injections were made slowly into the ear vein. If given rapidly, respiration would suddenly become shorter and gradually cease. Meltzer and Auer in a series of experiments demon-

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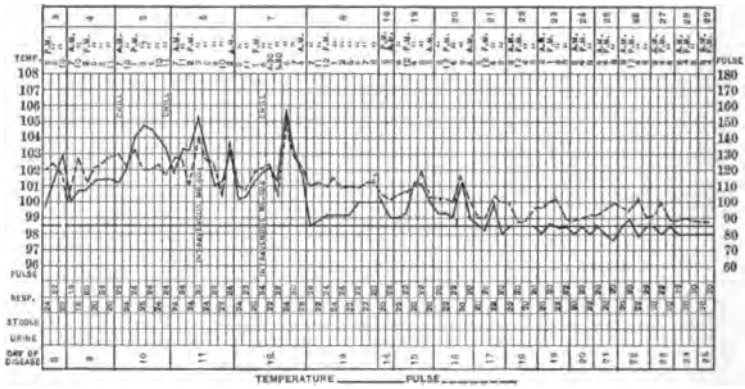
strated that the conductivity of nerve trunks can be interrupted by the local application of magnesia solution, and that a more or less complete block for afferent and efferent, for normal or artificial impulses can be established.

The effect of intravenous injection of magnesia sulphate upon the alimentary canal was of considerable interest. It is generally considered by those who are interested in the special study of physiological action of drugs that the saline purgatives produce their effects in several ways: first, by preventing the absorption of fluid from the alimentary canal, thereby retaining liquid in the tube; second, if given in proper concentration they cause a pouring out of fluid into the intestine, thereby adding to



CASE 4.

the amount which has been swallowed; third, it is supposed that they stimulate peristalsis and so hurry the contents of the bowel toward the rectum.

These views have recently been placed in doubt as to their correctness by investigations carried out by MacCallum, who confirms the earlier studies of Aubert to the effect that these purgatives act indirectly upon the intestinal wall if they are given intravenously. On the other hand, Meltzer and Auer have denied the accuracy of these observations and assert that the intravenous injection of sulphate of sodium fails to produce purgation, but rather tends to constipation. Some of the difference in results may be due to the character of the animal which was employed for experiment. It is well known that dogs are not purged with elaterium, which is one of the most active watery purges when given to human beings that we have.

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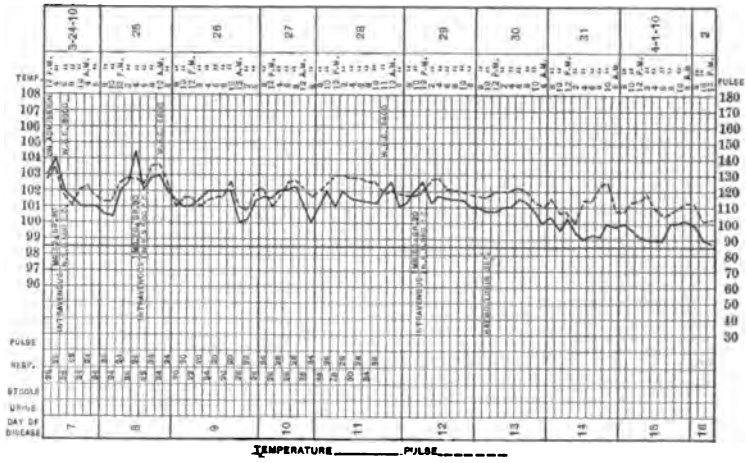
Hirtz and his coworkers believe from their experiments that some of the magnesia salt is absorbed from the stomach and then acts through the blood, stimulating the neuromuscular mechanism of the colon. The observations made in the intravenous use of magnesia sulphate during the experiments above described show that there is no regular purgative action when magnesia salts are thus administered. It occurred in about 10 per cent. of the rabbits thus treated, which may have been only a coincidence.

It has a marked purgative effect when injected into the peritoneal cavity. During this study a number of intravenous injections of magnesia sulphate were administered to human beings.



CASE 5.

It was determined that Magnesia sulphate could be given intravenously without any apparent harm to the patient. Experiments show that a 1 per cent. solution of magnesia sulphate in normal saline, will not produce hemolysis of the human blood. It will not precipitate the globulins as claimed by Teubusher when given in this dilution, nor have we seen any effect upon the specific gravity of the urine.

It was decided that 30 grains of magnesia sulphate in 8 ounces of normal saline can be safely administered intravenously to the average individual. It must be given slowly into the vein at a temperature of 105 to 108°, the time occupied in allowing this quantity to run into the vein being twenty minutes. If allowed to flow into the vein rapidly, respiration becomes embar-

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rassed and the patient complains of a sensation of heat all over the body. It has been given in this manner fifty times, either by the writer or his assistants, and the result in many instances has been extremely gratifying. It has been given at intervals of twenty-four hours for several days.

It was during these experiments that it was determined to try its use in a patient suffering from puerperal infection. A number of cases which were beginning a typical course, similar to others who died in spite of all treatment, have been treated by intravenous injection of magnesia sulphate with apparent benefit. Its use has been limited almost entirely to the treatment of puerperal infection and the number of cases treated are too few to draw definite conclusions from.

I have been pleased with its apparent marked effect in such cases and submit to you six charts showing the temperature curve after its administration. The patients whose charts are shown gave streptococci in pure culture from the blood serum in all except one. This case, No. 1. was seen early, three or four days after the onset of the symptoms. She was extremely ill, but when admitted the blood cultures were sterile. Cultures from the uterus showed streptococci. All of the cases whose charts are shown were extremely ill and the result obtained by the use of magnesia sulphate is the only excuse offered for this report. The results above reported in the treatment of infection from the uterus prove nothing, but so far as I know they are the first cases in which magnesia salts have been administered intravenously in the treatment of disease. We should remember that magnesia salts are toxic and when administered into the blood stream it must be done with great care and with a full knowledge of its danger. Later studies may demonstrate their inefficacy; also that the danger of administration is too great to justify the risk. This work of administering magnesia sulphate has been merely an incident in the study of hyperleukocytosis.

In conclusion I may say that a great advance will have been made if the natural aids which are called upon to overcome infection after it has occurred can by some means be placed on the alert, so that they stand well organized and ready to give battle to an anticipated invasion of bacteria. If this is possible, infection which might otherwise be most virulent in its progression can be overpowered and checked in its onset before a rapid multiplication of the germs and diffusion of their toxins occur.

We are at present inclined to speak glibly about certain changes

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in the blood incident to infection and various forms of disease. It is well to remember that the study of these important phenomena is still in its infancy and that much remains unproven. There is great opportunity in this field not only for the pathologist but for the clinician as well, because to him is given the opportunity to make careful observations at the bedside, which demonstrate the practical value of certain conclusions in spite of theoretical deductions to the contrary, which some time eminate from the laboratory. I am greatly indebted to Drs. Willetts and Denner for their patience and kind assistance in this work.

DISCUSSION.

DR. HENRY SCHWARZ, Saint Louis, Missouri.—I am as a matter of course greatly interested in the paper presented by Dr. Huggins, and I feel, as does the essayist, that in the severe forms of septic puerperal infection, which heretofore have been absolutely hopeless, any clinical experiment which seems to be of benefit is worthy of earnest consideration, even though at present we do not understand how it acts.

It is true, as the essayist stated, that streptococci are found much oftener in the blood than was formerly supposed to be the case, even in the milder and more or less local septic infections. It is doubtful whether we can differentiate between streptococci of high virulence and those of low virulence by the simple method suggested by Frommel, who claims that germs of highest virulence show a slow growth, while those of low virulence grow luxuriously when cultivated on blood-agar. (Blutschwamm.) But when all is said, the cases reported by Dr. Huggins, in which his method has been successfully employed, belong to the class of cases which, under our present means of treatment, are hopeless, and, as far as we know, will remain hopeless for some time to come.

There is no possibility of bacterial vaccines ever doing any good in these cases of acute general infection.

The only logical means of treatment would be the administration of a potent antistreptococcic serum. Such a serum can most likely only be obtained from the human species or from apes, as it is more than likely that streptococci in frequent animal passages change their receptors and that, therefore, sera obtained in the usual way must be inactive. Until we can obtain such potent sera, the remedy here offered in such an unassuming way deserves our most earnest attention.

DR. DICE.—I would like to ask the author of the paper as to the quantity injected and the frequency of the dose.

DR. HUGGINS (closing the discussion).—I am thankful to Dr. Schwarz for his discussion. The intravenous use of mag-

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nesium sulphate in puerperal infection has been an incident accompanying some other studies.

When first used it was in a patient extremely ill from puerperal infection—the usual remedies were applied without effect. Previous to this time the dosage of magnesium sulphate had been worked out after considerable care with dogs and rabbits. It was then given to a few normal individuals. I found that 30 grains of magnesium sulphate could be given to the ordinary individual without danger. It was determined that any solution stronger than 1 per cent. produced hemolysis. A 1 per cent. solution or less does not produce hemolysis nor does it cause any precipitation of the globulins. The only alarming effect, clinically, is upon respiration. If you give magnesium sulphate into the vein rapidly the patient at once begins to have embarrassed respiration, complains of a sensation of heat over the body.

We have given 30 grains of magnesium sulphate in 10 grains of salt solution. This has been repeated at intervals of twenty-four hours for several days.

The patients whose charts are exhibited were all very sick and the marked effect from this treatment, clinically, was quite gratifying. I appreciate that it may be of no value in the treatment of this form of infection, yet the results from its use seem worth reporting. The temperature is always reduced and the patient becomes quiet and usually sleeps for a few hours.

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FIBROMYOMATA OF THE UTERUS, COMPLICATING PREGNANCY, LABOR, AND THE PUERPERIUM.

A Study Based upon 100 Cases at the New York Lying-In Hospital.

BY
RALPH WALDO LOBENSTINE, M. D.

(With five illustrations.)

In order, to approach this subject in a systematic manner, I will ask you to consider it under the following headings:

A. Physiological changes in myomata during pregnancy, labor and the purperium.
B. Pathological changes.
C. Course and symptoms.
D. Statistics of our series.
E. Synopsis of illustrative cases.
F. General management.

A. PHYSIOLOGICAL CHANGES.

It will, I think, be not amiss to recall to your minds, the essential changes that take place in tumors of this class, during the parturient state. These changes are in some instances very slight, while in others they are so marked that the picture assumes an entirely different aspect. The tumor, in the typical instance, undergoes hypertrophy as well as hyperplasia of all its elements; added to this, there is a more or less marked edema. This edema is doubtless dependent upon the vascular changes in the tumor, incident to the pregnancy; it may depend upon tension of the capsule; direct pressure upon the growth; or, again, it may be due to the torsion of the pedicle, in a pedunculated tumor. This change in size, due to edema, is at times so marked that even the simple, practically harmless, small sessile fundal growths may gradually attain such size, that they become apparent to the naked eye on the mere inspection of the abdomen;

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or, an originally small interstitial tumor in the lower zone may finally, by this process of growth, fill the entire pelvis. Coincident with this increase in size, we find a change in the shape of the tumor. The usual round conformation gives way to the oval or the irregular. One of the most noticeable features is seen in the "relative change in position" of certain of these tumors, toward the latter part of pregnancy and during the early hours of labor. This is most pronounced in the case of myomata in the cervix or lower uterine segment. It is partly due to the expansion from edema; partly to the increasing size of the uterus; and in part (the most pronounced cause) due to the drawing-up of the cervical tissue into the lower uterine zone, in nature's preparation for delivery.

After the completion of labor, retrograde changes soon set in. The involution may or may not keep pace with the involution of the uterus. These retrograde steps start in, at times, with amazing rapidity; at other times, the process is a slow one. Under such abnormal conditions the uterus tends to involute more slowly, thus often delaying the involution of the growths themselves. In the typical case, as involution progresses, the tumor becomes more dense, more spherical, and resumes more or less its original position. Occasionally after three to eight weeks, the smaller tumors disappear entirely. Repeated pregnancies have the tendency to alter considerably the natural course of the changes we have just described.

B. PATHOLOGICAL CHANGES.

These few remarks lead us in the next place to consider briefly the abnormal changes which may arise in the course of the childbearing process. Such changes are dependent, in the main, upon *a.* nutritional changes, including torsion of a pedicle; *b.* infection.

a. The *primary nutritional disturbances* will depend chiefly upon poor vascularization of the tumor, due either to a sclerosis of its vessels or a thrombosis or to the natural stasis, in both circulatory and lymphatic systems, in the early days of the puerperium. The *secondary nutritional changes* are due chiefly to torsion of the pedicle of a pedunculated tumor or to marked pressure upon the tumor when the latter is incarcerated in the pelvis. With these faulty nutritional changes present, hyaline and fatty degenerations readily set in. With now the element of

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infection introduced, we can easily appreciate how such a growth may become necrotic, gangrenous, or even may suppurate. The most common organisms found in such cases, are the streptococcus, the staphylococcus, the colon bacillus, and the gonococcus.

Gangrene may at times set in before labor, but it is found most frequently in the early purperium. This is quite natural, surely, as it is during the early days of the purperium that we find the most fruitful soil for bacterial action—soil the resistance of which has been decreased by the sudden change in blood-pressure, by the alteration in the position of the tumor, and by mechanical irritation, more or less severe, during labor. Infection, with resultant gangrene and suppuration, is seen most commonly in the large submucous growths, while least frequently in the sessile subserous variety. Gangrene may start either beneath the capsule of the myoma or near the center thereof. The latter is seen, I believe, more often in the pedunculated tumors, while in the submucous growths, the changes have the tendency to advance from the periphery toward the center. Finally, I would point out the fact that the gangrene may have its origin in a small hemorrhagic area, either central or peripheral, due to either extreme torsion of a pedicle or to the force of the uterine contractions during labor.

C. SYMPTOMS AND COURSE DURING PREGNANCY.

In the consideration of this subject, we find that pregnancy does not take place so readily in a myomatous uterus. This is due in part to mechanical reasons; in part, to an accompanying endometritis. From 25 to 30 per cent. of women with fibroids are sterile. Goetze, from his experience at the Greifswald clinic, has recently shown that 13.6 per cent. of the women with small myomata were sterile; 17.4 per cent. of those with tumors the size of a child's head; and 50 per cent. of those with tumors larger even than this. Submucous growths interfere the most seriously with pregnancy. A further etiological cause of the relative sterility resides in the pathological condition of tubes and ovaries. If pregnancy occurs, the tendency to abort is greater than in uncomplicated cases. The early interruption of pregnancy, whether this interruption be spontaneous or artificial, may have very serious consequences; owing to the great tendency to severe hemorrhage in the bad cases, as well

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as to the mechanical difficulty, often present, in rapidly emptying such a uterus.

In those cases that proceed with the pregnancy, the chief symptoms are, excessive vomiting, more or less abdominal pain, pain along the sciatic nerves, tenderness, occasionally marked abdominal symptoms, due either to a twisted pedicle or to an incarceration; an increased tendency to placenta previa, accidental hemorrhage, premature labor. To these symptoms we must add the possible complications from tubes or ovaries. The element of pain and discomfort is very variable and depends upon the size, location, rapidity of growth, and number of the tumors. In some instances the symptoms are really severe and appear early. They undoubtedly at times cause so great distress that operative interference must be resorted to, *but in the vast majority of cases (and I wish to accentuate this statement), the symptoms are not pronounced and may be practically absent.*

Course During Labor.—The chief dangers during labor are from hemorrhage, adherent placenta, prolapsed cord, malpresentations, and from dystocia due to obstruction by the growths. As a result of the dystocia and malpresentations, together with weakened uterine musculature, rupture of the uterus is more likely to occur. Despite these dangers, we are forced to conclude from our study that labor progresses fairly normally in the majority of cases, although at times, of course, it may prove fatal.

During the puerperium, there is usually more pain than in the uncomplicated cases; the lochia is somewhat more profuse. The greatest danger lies in the degeneration and infection of the tumor or tumors, with or without a general septic process. When these become gangrenous or actually suppurate, there is increased pain and tenderness, more or less severe temperature and rise in pulse; there may be chills; there is a marked leucocytosis. There may or may not be a foul vaginal discharge; the abdomen becomes distended and tender, vomiting may occur.

In the early days of the disturbance it is often difficult to say whether active changes are going on in the tumor or whether there is not *merely* a moderate noncomplicated infection of the uterus. The submucous growths may be cast off in sections or spontaneously *in toto*. In the effort of the uterus to expel a fibroid, severe hemorrhage can occur. It is possible for a subperitoneal or interstitial suppurating myoma to rupture

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into the peritoneal cavity. Fortunately, this picture is not common. The puerperium progresses, in the case of most patients, *quite smoothly and with but little trouble.*

D. STATISTICS OF THIS SERIES.

Average age twenty-eight and one-half years; primiparæ, 43 per cent.; multiparæ, 57 per cent.

Type of myoma: 25 per cent. pedunculated, 21 per cent. submucous, 45 per cent. interstitial, 9 per cent. subserous sessile.

Size as large or larger than child's head at birth, 44 per cent.; smaller than this, 56 per cent.

Number of tumors: single in 63 per cent.; multiple in 37 per cent.

Location of tumor: 33 per cent. in lower zone of cervix, 67 per cent. in fundal region, 59 per cent. anterior wall, 41 per cent. posterior wall.

Number of abortions: spontaneous, 13; after operation, 2.

Presentation before any interference: vertex, sixty-five cases; breech, six cases; transverse, fourteen cases.

Hemorrhage at delivery: severe fourteen times; moderate eighty-six times.

Uterine tamponage in eleven cases.

Adherent placenta in four cases.

Fibroids becoming gangrenous six times.

Marked febrile reaction in puerperium, nine cases.

Fetal mortality at or near term (child dead on admission) six cases.

Maternal mortality, four cases.

Cause of death. [1](One) Intestinal obstruction in puerperium. [1](One) Shock and sepsis. [1](One) Sepsis (Gangrenous myoma). [1](One) Shock and sepsis.

Method of Delivery.—In this list of eighty-five cases of fibroids complicating pregnancy delivered at or near term, *operative delivery* was employed in the following, viz:

Version in three cases. High forceps in two cases. Median forceps in three cases. Low forceps in seven cases. Cesarean section alone in four cases. Cesarean section with hysterectomy in two cases.

This list shows the necessity of abdominal operative inter-

[1] Simple Cesarean sections with patients apparently already infected.

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ference in but six cases, *i.e.*, in a little over 7 per cent. of the cases. The more common obstetric operations, most of which were not difficult, were performed on fifteen cases, *i.e.*, 17.6 per cent.

Myomectomy during pregnancy was performed in this series but twice. One case went to term while the other aborted the day after operation.

Operations in the first four weeks postpartum.

Two complete hysterectomies (abdominal) for sloughing myoma.

One supravaginal hysterectomy for sloughing myoma.

Three vaginal myomectomies for sloughing myoma.

One vaginal myomectomy for submucous myoma, causing hemorrhage.

One abdominal myomectomy for subserous fundal myoma with severe pain.

All the other cases were advised to postpone operation until a later date.

E. CASES ILLUSTRATING THE VARIOUS PHASES OF THIS SUBJECT.

Case of incomplete abortion demanding serious operative interference.

C. N. 16940. Mrs. I. S., age thirty-three; I-para; admitted to the Lying-in Hospital January 7, 1910, on account of hemorrhage, supposedly due to a threatened abortion at the fifth month. Patient had been bleeding on and off for a month. On admission patient was found to have a uterus the size of a five-months' pregnancy, but it was found to be irregular in outline and consistency. The cervix was long and hardened and but one finger dilated. The patient was bleeding very considerably. A diagnosis was made of fibroid uterus and probable early abortion. Hysterectomy was deemed the best course to pursue, but owing to serious objections on the part of the patient, it was decided to attempt a thorough emptying of the uterine cavity from below. In order to reach the uterine cavity proper, an anterior incision had to be made in the cervix, the cavity was then emptied of an incomplete three months' abortion. The uterus was tightly tamponed and the cervical incision sutured. The uterus was found to contain two large fibroids; one on the posterior wall, low down, the size of an infant's head, and the smaller one the size of a goose egg, on the lateral wall anterior. On January 12, the patient having consented to a hysterectomy, and as there

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was some slight temperature and more lochia than normal, a hysterectomy was performed. Recovery was uneventful.

Illustrating some of the dangers of myomectomy during pregnancy.

C. N. 17321. Mrs. V. S., age thirty-two; I-para. Patient admitted to the hospital five months pregnant, complaining of severe pain to the right of the uterus and of a bloody vaginal discharge, which had been continuing for from four to five months. Examination showed a five months' pregnant uterus; cervix soft and slightly patulous; tumor, the size of a grape-fruit, was palpated in the right broad ligament, attached to the right wall of the uterus. A myomectomy was performed with considerable difficulty and considerable hemorrhage. Patient stood the operation well, but aborted the following day and had a stormy convalescence.

C. N. 7274. Mrs. A. M.; age thirty-four; I-para. Had a myomectomy performed for large subserous fibroid at third month. Pregnancy progressed satisfactorily and had spontaneous delivery at term. On discharge of the patient at the end of the puerperium, it was found that the uterine body still contained several fair sized tumors.

This case illustrates well one of the reasons for not doing a myomectomy during pregnancy, inasmuch as it is possible to overlook some of the growths, or after opening the abdomen it will be found impossible or unwise to remove them all.

Cases illustrating large fibroid without symptoms.

CASE I.—C. N. 6248. Mrs. J. Z., age thirty-four; IX-para; was delivered at full term. Normal labor. Moderate bleeding during third stage. An examination of the patient before labor revealed a large fibroid near the right horn of the uterus, about the size of a fetal head. Sixteen days postpartum examination showed that the tumor had not decreased in size, lying just back of the symphysis. Convalescence was uneventful.

CASE II.—C. N. 6245. Mrs B. K., age twenty; I-para. Patient delivered normally at full term. Considerable post partum hemorrhage. Convalescence normal, and it was not until on the fourteenth day, when the discharge examination was made that it was discovered that there existed a subserous fibroid, the size of a fetal head and attached entirely to the fundus. Operation postponed until a later date.

CASE III.—G. H. No. 1764. Mrs. T. A., age twenty-three; I-para; was admitted April 29, 1907, about four and one-half

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months pregnant, for albuminuria. The albuminuria was only moderate in degree. The patient had a large pedunculated fibroid, the size of a grapefruit, attached to the posterior surface of the fundus. She had no symptoms therefrom and refused to stay but eleven days in the hospital. Her further progress was uneventful.

CASE IV.—C. N. 12820. Mrs. M. P., age twenty-six; I-para; delivered normally at ninth month, June, 1908. Labor nine and one-half hours, short second stage. Presentation vertex, R. O. P. Examination showed a large pedunculated myoma attached to the fundus by a thick pedicle. This caused no trouble from dystocia. There was, however, considerable hemorrhage during and just after the third stage, so that the uterus had to be tamponed. Convalescence was uneventful. The tumor was not removed at this time, as it seemed unwise, with no symptoms present, to do so until a later date.

CASE V.—C. N.—Mrs. L. L., age forty; I-Para. Had normal pregnancy despite several fibroids of the fundus. One of these tumors situated near the right horn on the anterior wall was the size of an orange. Many men would have been tempted to do a myomectomy on this case during pregnancy. The patient, however, went through pregnancy, labor, and the puerperium with absolutely no disturbance.

Nature's method of drawing up a myoma out of the pelvis during labor.

CASE I.—C. N. 12236. Mrs. I. M., age thirty; III-para. During this pregnancy she was observed from the third month to term. When first seen there was found to be a fibroid the size of a goose egg to the right and behind the cervix in the brim of the pelvis. This tumor increased rapidly in size during pregnancy. At the seventh month it had reached the size of a child's head. At the time of labor it was filling the brim of the pelvis. Patient had had but few symptoms during pregnancy. After four hours of labor, the tumor could not be felt per vaginam, but could be felt abdominally and to the right. There was a normal breech delivery of a living child. The patient insisted on going home on the tenth day after a normal puerperium. Three months after delivery the patient still refused to have the tumor removed. At this time it was again located in the pelvis and had decreased in size to that of an orange.

CASE II.—C. N. 11082. E. B., age twenty-eight; III-para.

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Patient was admitted in labor at term. She was found to have a large fibroid the size of a child's head at the brim of the pelvis. As there seemed to be a tendency for the cervix to dilate normally and for the tumor gradually to assume a higher position, a waiting policy was pursued. After a delay of about eight hours, the tumor had been drawn up entirely out of the way and labor completed normally. The puerperium progressed satisfactorily.

CASE III.—C. N. 14795. Mrs. J. C., age twenty-three; I-para, at term; was delivered at the hospital normally in 1908. When three months along, a myoma the size of an orange was found in the pelvic brim. At the time of labor this tumor had enlarged to the size of a child's head, and was still in the brim. During labor it was drawn up entirely out of the way by nature. It was an interstitial growth in the lower zone, posteriorly. Little bleeding during labor. Convalescence easy. On discharge, the tumor was again down in the pelvis. Operation postponed until later.

Cases illustrating large fibroid without symptoms during pregnancy; also possibility of delivery by forceps or version.

CASE I.—C. N. 14371. Mrs. A. S., age forty; VI-para; at term. Had long, tedious labor. Transverse presentation and large fibroid occupying anterior wall of lower uterine zone. The tumor was entirely below the presenting part and was a large submucous one, fairly movable. The operator decided to try delivery by version. This was successful, the child weighing six and a half pounds and alive. Although there was considerable pain and tenderness in the puerperium, convalescence was satisfactory and operation delayed until a later date, inasmuch as there seemed to be no pathological changes in the tumor.

CASE II.—C. N. 15715. Mrs. A. A., age thirty-nine; I-para. Delivered July 7, 1909; moderate hemorrhage and placenta expressed easily. Moderately contracted pelvis. There was a large subserous fibroid, size of a grapefruit attached to the anterior wall in the body of the uterus proper. Patient was delivered with high forceps without great difficulty. Puerperium was quite smooth. Had no symptoms from fibroid in the puerperium, and was discharged on the thirty-fifth day, refusing operation, with a fibroid the size of an orange.

Cases illustrating true dystocia, requiring Cesarean section.

CASE I.—C. N. 4591. Mrs. R. B., II-para, was admitted to the hospital at term. Examination showed a flattened pelvis

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and two large fibroids the size of grapefruit, one in the pelvis, the other at the fundus. There was a transverse presentation. A Cesarean section was done and a supracervical hysterectomy. Patient went home on the nineteenth day in excellent condition. The tumor was interstitial.

CASE II.—C. N. 17808. Mrs. E. M. was admitted to the hospital June 8, 1910. She was a I-para and had been in labor for twenty-four hours before admission. The membranes had been ruptured for about twelve hours. On examination the uterus was found to be tonic; there was a very large interstitial myoma blocking the pelvis almost completely, so that the cervix, which was dilated to 6 cm., was forced high up over the right "linea terminalis." The fetus was dead and was presenting by the breech. There was also another large pedunculated myoma, attached to the fundus, and floating freely in the peritoneal cavity. As the child was dead and as the labor had been so prolonged, we should have preferred to do a craniotomy with breech extraction, but concluded that this could not be done with the conditions present. A Cesarean section was at once performed and the uterus removed. The cervix was left *in situ* after the thorough disinfection of the canal. The patient made a good recovery, although there was a moderate temperature curve for several days. She left the hospital on the seventeenth day. Had we attempted to deliver through the natural passages we would doubtless either have failed, or else have caused serious trauma to the uterus and myoma.

Cases of suppurating myoma in the puerperium.

CASE I.—C. N. 10160. Mrs. R. M., age forty-five; I-para. Delivered by midwife and doctor outside. Physician had delivered a dead baby with forceps with difficulty. Patient then went into collapse and was sent into hospital. There was found to be an extensive tear in the left broad ligament and a large interstitial fibroid in the anterior wall of the uterus adjacent to the tear. There was no fresh bleeding on admission. Patient was simply kept quiet with an ice pack over the uterus after her recovery from shock. Temperature for the first two and one-half weeks ranged between 98° and 100.4°. On July 12, as the lochia was very foul and as the fibroid was evidently becoming gangrenous, an easy myomectomy was performed from below. The tear into the broad ligament was healing fairly well. After the operation the patient had an up-and-down

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temperature running between 98.6° and 102° for the first few days, then gradually coming down to normal. Patient left against advice on July 26, fourteen days after operation in fairly good condition. The patient had a myocarditis, which evidently had been the cause of her collapse during labor.

CASE II.—C. N. 9728. Mrs. P. S., age twenty-four; I-para. Delivered by midwife three days before admission to hospital. Labor had been normal. After delivery, both the midwife and

FIG. 1.—Large interstitial myoma of cervix and lower zone, causing true dystocia and requiring Cesarean section.

the patient herself noticed a large uterine growth, which had not been observed before. On entering the hospital, the uterus was found to be of fair size and an interstitial fibroid mapped out, the size of an adult's head on posterior wall of the uterus. Lochia was moderate but had a foul odor. There was moderate tenderness over the tumor. Patient ran a temperature between 101° and 102° for thirteen days. The tumor remained the same size as on admission. Finally, on the fourteenth day, as there was no perceptible improvement, a laparotomy was performed.

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A panhysterectomy was performed, but even at the time of operation we decided that the infection had already invaded the lymphatics. Although the operation was done easily and with due care to the risk of infection, the patient died on the fourth day after operation. The myoma was found to be gangrenous with numerous suppurating focci. This case might have been saved if it had been operated on earlier.

FIG. 2.—Large interstitial myoma, the size of a child's head, causing true dystocia, requiring Cesarean section.

CASE III.—C. N. 14522. Mrs. K. S., age twenty-two, I-para, was admitted at full term to the hospital in labor. Normal delivery. Rather profuse postpartum hemorrhage. The after-pains during the first few days were severe and the lochia profuse. On the seventh day, patient developed a temperature of 101°. On the eighth day, with the temperature still up, the uterus was explored and a submucous fibroid found at the anterior wall, practically filling the entire uterine cavity. There was a foul lochia; for sixteen days the patient ran a temperature of between 100° and 104°. On the seventeenth day, permission was give for operation and a supracervical hysterectomy was performed. For the first week after operation temperature ranged between 99° and 102°; pulse around 100; the leukocytes went up as high

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as 21,000 and the polymorphonuclear count 91 per cent. Then the temperature began to come to normal and the patient was discharged in good condition thirty-six days after operation.

N. B.—During the days immediately preceeding the operation, the uterus had become much more tender and discharge more foul. The lower edge of the fibroid could be seen by exposing the cervix and it was plainly evident that it was sloughing rapidly.

FIG. 3.—Pedunculated myoma, size of child's head, with large interstitial myoma of posterior lower zone, requiring Cesarean section.

CASE IV.—G. H. No. 310. Mrs. C. L., age fifty-two; XIV-para; admitted to hospital with incomplete abortion and with a history of having passed apparently a small sloughing fibroid. On admission, the uterus was explored; the lochia was foul and the uterus was found to be the seat of a number of small interstitial and submucous growths. In all, four sloughing submucous fibroids, about the size of a large egg, were removed from below by myomectomy. Most of this proecdure could be accomplished with the finger in the uterus. For the first few days after admission patient ran a temperature between 101° and 102° and was discharged against advice on the third day. Her recovery was slow but finally complete.

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CASE V.—C. N. 7486. Mrs. F. L., age twenty-six; I-para. Went into labor about term, April 30, 1906. On examining the patient it was found that a large submucous fibroid occupied the cervical section of the uterus, blocking the birth of the child. Despite this it was decided, however, to try an internal podalic version. This was successful owing to the fact that the tumor,

FIG. 4.—Semi diagrammatic picture of tumor at time of removal.
3. Line of amputation.

although the size of a child's head, was somewhat movable so that it was possible to draw the child out past the tumor. A manual extraction of the placenta was necessary. The child weighed 3750 gm. On July 8, a supravaginal hysterectomy was performed for suppurating myoma. In the interval between the delivery and the hysterectomy, the patient had been running a temperature of 99° and 103.4°, with a pulse around 100. After

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the hysterectomy, there was some rise of temperature for the first week and then a gradual settling down to the normal. Patient made good recovery.

F. TREATMENT.

In many instances no special treatment is necessary—in fact, numerous cases proceed with little or no medical attention into labor and even through the labor, when perhaps the complication is discovered for the first time.

It is wise, however, when the case is seen early—even in the absence of symptoms, to caution the patient about over-exercise, automobiling and the like, owing to the ease with which some complication may set in. These instructions can often be given without informing the patient of her real condition, where this is as yet unknown to her.

The complications we have to treat during pregnancy are to repeat chiefly:

1. Excessive vomiting.
2. Abortion.
3. Pain and an unusual amount of abdominal discomfort.
4. Hemorrhage from placenta previa or accidental hemorrhage.
5. Accompanying tubal or ovarian trouble.
6. Occasionally, cardiac manifestations.
7. Occasionally necrosis from autoinfection.

In the absence of a true toxemia, the excessive vomiting, which is seen from time to time in pregnancies complicated by myomata, is generally caused by incarceration, either of the uterus or of the tumor, in the pelvis, or from a twisted pedicle. By correcting these conditions, relief may be immediate. The *condition of either spontaneous or induced abortion may prove*, as before stated, a most serious complication and operation. I cannot impress this fact too strongly upon you. The bleeding may be tremendous. If the growth is in the lower zone or the cervix proper, it is often most difficult to empty the uterus quickly and thoroughly and when this organ is even once thoroughly emptied, it may seem almost impossible to check the bleeding, owing to the presence of the tumor and to a frequently accompanying sclerosis of the uterine vessels. While tight tamponage often works satisfactorily, still it will fail at times. I would suggest an hysterectomy in the bad cases. In the simpler cases before attempting intrauterine manipulation, it is

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of real advantage to secure as thorough softening of the cervix as possible by means of tight vaginal tamponage for twenty-four to forty-eight hours with iodoform gauze. With the cervix softened and patulous, we should then perform a digital emptying of the uterus Where this is impossible we use very gently placental forceps and Munde curette (which is large and dull), followed by tight tamponage with the use possibly of Momberg's method of aortic compression untill all danger of serious hemorrhage is passed.

I would repeat, *the so-called conservative treatment of the bad cases gives a high mortality and should not be followed.* The *pain and local tenderness* can usually be satisfactorily treated with rest and ice. The bad cases will demand, myomectomy or hysterectomy. Spontaneous hemorrhage—either accidental or from placenta previa, really the most alarming symptoms during any period of pregnancy—tends to be of greater import in the latter months. The treatment will depend entirely upon the size, location, or number of the growths. The severe cases are all more safely treated by laparotomy. It occasionally happens that a myoma becomes necrotic during pregnancy. This is rare but may be seen. When it occurs, the condition is dependent upon vascular nutritional disturbances and infection with the colon bacillus or from an infected Fallopian tube. Such a condition demands at once myomectomy or hysterectomy with or without Cesarean section.

During Labor.—Prolapsed cord, abnormal presentations, hemorrhage, have to be handled in their several well-known ways; always remembering that a laparotomy may be necessary. Actual dystocia from tumor obstruction is not as common as is generally supposed. Nature accomplishes wonders in her method of drawing up an interstitial or sessile subserous tumor out of the pelvis. This may even take place in the case of a pedunculated growth. Where an actual dystocia exists, the treatment sums itself up into the following alternatives:

a. Efforts at dislodgement of tumor in the subserous or pedunculated type, and delivering normally *per vaginam.*

b. With the above conditions and where dislodgement is impossible, a vaginal myomectomy and delivery from below.

c. Abdominal Cesarean section with hysterectomy or myomectomy depending on conditions present.

d. Abdominal myomectomy for pedunculated growth and allowing labor to proceed normally. (This I do not believe in.)

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e. It may be possible even in a good-sized submucous or interstitial fibroid to deliver from below, past the growth, especially by version; but where there is any difficulty, it is better to *work from above;* for you all are aware of the serious danger of inflicting trauma upon such a growth, in the course of delivery, which will result in almost certain necrosis and gangrene, possibly general sepsis. Delivery from above under these circumstances will perhaps save the patient's life or at least shorten her ultimate convalescence markedly.

From the twenty-two actual cases of gangrene and suppuration of fibromyomata collected by M. G. Berger (Paris, 1907); and three cases reported by Fry in December, 1909, and from our own cases, we see how serious this complication really is. In Berger's cases, three of the nine following abortion lived. Those that lived were all treated with hysterectomy. The other twelve cases followed premature labor or labor at term with ten deaths. All presented hard labors. One of the three Fry cases died.

In our cases of known gangrene but one died. It is probable, however, that the two other cases that died of sepsis, had also an infection of the tumor. This could not, however, be positively ascertained. In the light of these statistics and of our general experience I am constrained to believe that in the puerperium, if the patient begins to show signs of an infective process in the tumor, such as undue pain, tenderness, and temperature, early operation should be resorted to. Considering the serious results that may follow gangrene or suppuration, I do not deem it wise to rely upon conservative treatment more than a very short time and I would strongly urge *early interference*. If some improvement does not occur after a few days of symptomatic treatment, delay means, as a rule, later regrets; for it is not unlikely that with the infected tumor, there is uterine infection too, which may be spreading laterally into the lymphatics or veins and which thus may end in the patient's death.

Finally, in cases without symptoms in the puerperium, do not attempt radical operation until late.

GENERAL CONCLUSIONS.

1. A myomatous condition of the uterus predisposes to sterility. Parvin states that while the average sterility is one in eight it is one in three, in women with myomata. Charpentier's figures, too, correspond closely to these.

2. The tendency to abortion is increased. In the bad cases,

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both spontaneous and artificial abortion may prove difficult to handle *per vias naturales* and most dangerous to the life of the individual. In the severe cases, where it is difficult to gain access to the cavity of the uterus proper, and in the presence of real hemorrhage, laparotomy is the operation of choice.

3. The great majority of the cases that do not abort early proceed through pregnancy, labor, and the puerperium with few or no symptoms; therefore operative interference is but rarely indicated during pregnancy, and is as a rule meddlesome midwifery. I make this statement cautiously, for I know well that in the minds of many it will be open to criticism. The operation of myomectomy during pregnancy is just now very popular, but I for one believe it is but *rarely indicated.* The results of *myomectomy* are none too good. I repeat that occasionally it may be wise to do a myomectomy, and occasionally necessary to do an hysterectomy, but as a rule *conservatism should be the watch word.*

4. Nature accomplishes wonders at the time of labor, overcoming any apparent dystocia, in a large percentage of cases. When delivering, avoid all possible trauma to the tumor.

5. Finally, with the development of the symptoms of gangrene in a myoma, during the puerperium, operate early to save the life of the patient.

DISCUSSION

DR. E. GUSTAV ZINKE, Cincinnati.—Mr. President: Dr. Lobenstine has given such a cl ar description of this unfortunate complication but little can be said, and this is not adverse to his paper. It is not so very long ago when fibromyomata of the uterus complicating pregnancy was considered a justification for a hysterotomy. But of late the profession has changed its position completely. It is no longer an indication for either a Cesarean section, a Porro operation, or interruption of the progress of gestation. Dr. Lobenstine has clearly outlined the indications for operative interference during the progress of gestation as well as during labor.

My experience is limited to four cases: the first was a case of interstitial fibroid involving the entire uterine musculature. Postmortem examination revealed that the uterine wall was 2 inches in thickness throughout, the cervix included. The condition was not recognized antemortem. The woman went into labor, the family physician was called, and to his surprise there was no progress. He sent for a consultant and the two were waiting and waiting but there was no headway. The membranes ruptured, but the child could not be born. When I was called

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into the case the unfortunate woman was *in extremis;* septic from frequent examinations and repeated and unsuccessful efforts of introducing the hand into the uterine cavity. She had a temperature of 103° F., pulse 140 and hardly perceptable. Fetal movements could not be felt. The fetal heart could not be heard. The patient was at her home. The surroundings were not very good. To move her to a hospital would have meant death on the way. It was not easy to determine the wisest course to pursue. The patient's only chance was in emptying the uterus. The existing conditions preventing labor were unknown. Abdominal section revealed interstitial fibroid of the uterus as before described. There was not the slightest evidence of softening. A very large incision into the uterus was necessary to remove the dead child, which was of full term. The mother died before the abdomen was closed.

The second was also a consultation case in the care of an able practitioner. He had delivered the patient several days before and was surprised that the hemorrhage would not cease. The uterus remained unusually high, almost on the level of the umbilicus, and refused to contract any further. At first the presence of another child was suspected. After thorough sterilization and complete dilation of the os, I readily introduced my hand into the uterine cavity, and found a tumor the size of a small muskmelon, probably 6 inches in length and 3 1/2 to 4 inches in thickness. It was freely movable, had a small pedicle, was easily extracted from the uterine cavity and amputated. The patient made an excellent recovery. This tumor was soft and showed signs of decomposition.

A third case was that of a woman pregnant about four and a half months. She had a subperitoneal fibroid, the size of a small orange, in the anterior uterine wall near the fundus. I advised removal of the growth, but the patient refused. After consulting with her family physician, we concluded to wait and watch for further developments. At the end of six months the tumor was fully twice the former size and I was impressed with the change in its consistency. The pedicle had become broader and the tumor itself flattened and slightly softened. We again advised waiting. This patient went to the end of term without an untoward symptom. She delivered herself. An examination after the puerperium showed that the tumor had completely disappeared.

The fourth patient was a widow, of from forty to forty-five years of age, whom I knew to be the victim of multiple uterine fibroids, submucous, intramural, as well as subperitoneal. She refused to submit to an operation two years previous to her last visit. Now she stated: "Doctor, I am getting so much worse that I have concluded to have the womb taken out." An examination revealed that the tumors had grown considerably, extending fully 2 1/2 inches above the umbilicus. The growths also extended well into the pelvic cavity. There

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was no special softening of the cervix. Pregnancy was not suspected. I accepted it as one of those conditions in which the case had suddenly taken a turn for the worse. She suffered a great deal of pain, and it was this that brought her back to me. Splitting the tumor mass after its removal, a six months fetus was found within the cavity.

DR. FRANCIS REDER, St. Louis.—This is a very interesting paper. I wish to call attention to the fact that a uterine tumor, without showing any evidence of growth for a long time, may become stimulated to grow on account of pregnancy having taken place. On two occasions this happened where a diagnosis of pregnancy complicated by a tumor was made. The tumor began to grow so rapidly that a secondary diagnosis of cyst was made on account of the rapid growth. At operation, however, it was found that we had a pregnancy complicated with a fibroid of the uterus.

I mention these cases to show that a tumor not recognized may be stimulated to rapid growth by pregnancy.

DR. K. ISADORE SANES, Pittsburg.—We are sometimes compelled to operate for fibroids during pregnancy. I was compelled three times to operate for fibroids during the third or fourth month of pregnancy on account of pressure symptoms. Whether it is common for the pressure symptoms to appear so early, I no not know. But in these three cases I was compelled to perform hysterectomies in the third and fourth month. The pressure in one case was on the right ureter, and in the two other cases on the rectum. Rather an interesting case of fibroid complicating pregnancy was a woman who while pregnant seven months was extensively burned; she developed a temperature and she was admitted to the obstetrical department of the Montefiore Hospital where she was delivered about one month after admission. After labor the temperature kept up high and symptoms of septicemia developed. A mass could be felt plainly in the right hypochondriac region about the size of a child's head. Under the impression that she was a case of uterine fibroid with puerperal septicemia, she was kept in the obstetrical department for about a month, until her general condition had sufficiently improved to permit the radical operation. On opening her abdomen we found an adherent uterine suppurating fibroid about the size of a child's head. Hysterectomy was performed and the woman got well.

A year or two ago I reported in the *American Journal of Obstetrics and Gynecology* a case which demonstrates that sometimes we can remove through a vaginal incision an intraperitoneal fibroid obstructing labor and then deliver the child *per viam naturalem*. I reported this case in detail. The obstruction caused by the subserous fibroid of the lower uterine segment was complete, the labor pains directing the head against the os pubes and pressing the fibroid down in front of the head in the

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posterior culdesac. To remove the obstructing fibroid, the culdesac was entered and finding the tumor partially subserous, it was enucleated; the edges of the raw surface were brought together and a living child was delivered *per vaginam*. Both child and mother recovered. This woman has lost a considerable amount of blood before the operation and in spite of her albuminuria and low blood count made an uninterrupted recovery.

DR. A. B. MILLER, Syracuse.—This subject Dr. Lobenstine has brought to our notice is one, of course, that is so common in the experience of every gynecologist that I feel it is worthy of the consideration and discussion of this association. Some of the things that have been said in the discussion in connection with the paper brought to my mind one experience which was early, and that was a case of this character, a condition of multiple fibroids, the case having been seen in consultation. The fibroids were of a little different variety, interstitial and subserous, and also fibroids which complicated the cervical portion of the uterus rendering delivery absolutely impossible. If we had such a case to deal with to-day the probabilities are we would permit the woman to go to full term, and then resort to Cesarean section.

The patient was a widow, thirty-six years of age, who came with her physician not knowing the exact condition that was present, and acknowledging the fact that it was possible she might have conceived, because she had been flowing so freely until about five months previously. Examination revealed the conditions spoken of within the abdomen, with the uterus rising high in the abdomen, and complicating apparently respiration even at this early stage. At this time we knew less of the treatment of these cases than we do at present. It would seem that we were justified in resorting to surgery. She was sent to the hospital and operated on, and died following the operative interference. It was in the preantiseptic period. Of course every one of us see a large number of these cases at the present time that do not die.

Instead of taking your time to allude to the various causes and complications, there are only two or three cases that I care to speak of, as I would prefer to write up my experience subsequently, rather than take up the time of the association now.

I found in my service at the General Hospital one morning a young woman who was blind, and who had spent the summer with her family on a canal boat. She had been a student at the Batavia Institute for the blind. Examination revealed she had quite a large fibroid tumor. She was, of course, out of wedlock. There was no suspicion of pregnancy. We kept her, however, in the service for some time until she had passed two periods. Her periods apparently were quite regular and were normal, but the growth seemed to be enlarging. She had suffered previous to her entrance to the hosptial from the presence

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of the growth, consequently it was thought wise that it should receive attention, and she was sent to the operating-room and the growth was removed. It was one of the globular interstitial variety of tumors without the suggestion of the growth being in the cavity of the uterus, or growths on its exterior. After removing the uterus there seemed to be a softened condition, and while we get this in so many cases of myomata for some reason my suspicion was aroused or increased, and I dropped the growth into my bag and took it to my office. On opening it, there was a fetus that had reached the period of three and a half months' development.

I recall another case of the same character, the woman coming from a neighboring city, and was admitted into my private hospital. This patient was forty-three years of age. Her youngest child was twenty-three. There was no suspicion in the presence of her attendants of being pregnant. In examining her the first time I for some reason got the impression that she might be impregnated, and I stated my conviction to the attending physician. He was so positive that such a condition could not exist that further consultation was demanded. Local physicians were called in to confirm my diagnosis or otherwise. They did not confirm it. They kept calling in physician after physician, thinking that some of them might see the condition from the standpoint I had observed it until five physicians saw this patient. The woman herself knew such a condition could not be present, and her husband knew such a condition could not be present. They always know these conditions. They can give us information that we cannot get simply by physical findings. However, after having remained in my private hospital for a period of time and being kept under observation for some weeks, they felt it was no longer necessary to keep the woman in the hospital, and the husband said he was going to remove his wife. I inquired his reason for so doing, and he said, that I had displayed so much confidence or positiveness in my diagnosis that he had lost confidence, and that he was going to remove his wife to a neighboring city to be operated. This startled me and created some activity on my part which otherwise would not have been shown. I simply then stated to him in the presence of the other physicians my understanding of the condition his wife was in, and that if she was pregnant I was prepared to operate. Consent was given, the patient was sent to the operating-room, and the tumor was removed. After its removal one of the physicians present simply said, "Doctor, it is not possible that this woman could be pregnant. You must be mistaken." While I was simply finishing up the technic I requested the doctor to open the growth, and he did so, and as he put his knife into it on the side and cut into a nice large fibroid out popped the fetus. He turned the tumor over and cut it on the other side, and as he did so the little thing extended its hand and said, "Good morning, doctor,"

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greeting him altogether too freely. (Laughter.) The greeting was such that the inclination of the doctor was to slide out of sight. The doctor showed it to all the Fellows, and, of course, the woman, as we expect now in all of these cases, recovered. I think we are liable to meet with these cases now and then.

There is one other variety that is really of more serious moment than this. A lady was brought to me, advanced in years, suffering from the presence of fibroid, and was said to be pregnant. After considering her physical condition and her history, I gave it as my judgment that she should return to her home and be kept under careful observation, and that subsequently she might be operated on. This morning I received by telephone a message that the woman had had two convulsions. The probabilities are that these convulsions are uremic in character. I understand she is on her way to the city at the present time and is to be sent immediately to the hospital. It is possible that in this case, owing to the condition of the urine, operation will have to be postponed for a certain period. Here is a complication coming on in a woman advanced in life that is serious. If, when I saw this woman in consultation a week ago, I thought there was kidney complication existing in addition to the fibroid tumors, it would have been best in my judgment that the sooner the patient was prepared for operation, the better the outlook would have been for her.

Dr. E. Gustav Zinke, Cincinnati.—Permit me to relate one case in connection with this paper. A patient was brought to me from Indiana. She claimed she had menstruated the last time seven days ago. On examination the abdomen was found considerably distended. Hard and soft masses could be felt through the vagina as well as through the abdominal wall. My diagnosis was fibrocystic tumor of the uterus, or, possibly, fibroid tumor of the uterus complicated with a cystic tumor of the ovary. Pregnancy was not suspected. The operation was performed at St. Mary's Hospital. When the abdomen was opened, a five months' pregnant uterus presented itself. Here was, seemingly, a perfectly normal pregnancy. For a moment I was seriously embarrassed, believing I had opened the abdomen of a woman who was pregnant only. But when I put my hand behind the uterus I found a hard intraligamentary fibroid filling the entire pelvic cavity. In order to extirpate the tumor the pregnant uterus had to be removed first. The patient made a splendid recovery.

Dr. Thomas B. Noble, Indianapolis.—Dr. Zinke's remarks recall to mind another case which I will report apropos of the consideration of fibroid tumors associated with or complicating pregnancy, or pregnancy complicating fibroid tumors, whichever you may choose to call it. In this connection I rise to call attention to tumors situated as in the case reported by Dr. Zinke. These tumors that are situated posteriorly below or behind the

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cervix should demand a very careful study. I myself have had such a case, one in which I might have done a very beautiful little turn and saved a major operation, but did not. It is one of my cases of Cesarean section. This woman was in the hospital, and had been there several days in charge of others. I saw her for the first time at midnight, with the story that three years before she had had a very difficult labor because of a fibroid tumor growing in the lower segment of the uterus, as mapped out at that time. The physicians who had delivered her at that previous time were with her then. This tumor situated largely, as you see, that one there (indicating) filled the brim of the pelvis completely, preventing any engagement or advancement of the head, and this woman was in labor at term, and the only thing to do was a Cesarean section. I examined the tumor. It was very hard, immovable, irregular, and globular. It was resistant to my finger, and I thought I had a fibroid tumor which completely interfered with the delivery. How far up it extended, I could not tell. I did a Cesarean section, then went after the tumor, and found a thick-walled cystic ovary, showing at once that if I had thrust a trocar behind the cervix I could have emptied the tumor and have had natural delivery. How much better it would have been had I done such a procedure as that and avoided Cesarean section. However, the woman made a beautiful recovery, and had a rapid convalescence.

In another case, early in the night in a neighboring city, I was called to do a Cesarean section. Two country physicians had been with the woman, had applied forceps, and had worn themselves out during the day. A tumor known to have been present for a long time was occupying the posterior and lower segment of the uterus, involving the cervix, extending down well into the vagina, and filling up the pelvic brim. These physicians had been trying to push back this tumor beyond the promontory of the sacrum and to deliver, and had been working all day, but they gave it up as a hopeless job, and at that late date sent for help, advising me to come prepared to do Cesarean section. I drove up to the house, found a physician sitting on the front porch and walked in to find the mother having delivered herself of a dead fetus. That was a very unusual situation. The baby was lying in the bed. How could that be explained? In this wise: from the woman in attendance I learned that she had been anesthetized, and the physicians had given up their efforts. She was turned over to the care of the country women who were present. She waked up presently, turned upon her side; the abdomen was thoroughly relaxed, and the uterus fell forward, and by its own leverage action lifted that tumor above the promontory of the sacrum. Presently she came to herself, had a pain, and there was nothing to interfere with the birth of the child. Again, in this case, we have impressed the simple point that I wish to lay stress on here, and that is, tumors located low and posteriorly should receive our careful study and investigation.

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DR. THERESA BANNAN, Syracuse.—This discussion seems to have brought out very emphatically the fact that pregnancy is always possible. In many of these cases the hope of offspring is well nigh forlorn, and to operate under such circumstances, when there is pregnancy, with loss of the child, and thereby depriving the woman of the possibility of a child, is a calamity if it can be avoided. I simply rise to emphasize one diagnostic point which has not been brought forward, and that is a routine examination of the mammary glands. From the beginning of conception there is a change in the mammary gland. From the first month on there is a secretion, and at six weeks to two months the signs are positive. While we may have a secretion in the virgin breast, and uterine disturbances in married women, still it is a diagnostic sign which is of the utmost importance, and if Dr. Zinke does not object to criticising, if he had examined the breasts of the widow he might have found something of diagnostic importance. I do think that in all these gynecological examinations in our work that we are doing in this department the mammary glands must take their place as a diagnostic sign of importance in all operative and other questions that come up.

DR. CHARLES N. SMITH, Toledo.—I wish to report briefly six cases of pregnancy complicated by fibromyomata, and I will prepare the cases more in detail for the transactions.

The first case was a woman, four months' pregnant, with a large fibromyoma about the size of an adult head, lying below in the cavity occupied by the fetus. This was a number of years ago, before I was so enthusiastic over Cesarean section, and I did a hysterectomy, removing the fetus and tumor, something which I should not do at the present time.

The second case was a maiden lady, forty years of age, who was admitted to my service at St. Vincent Hospital. She had an interstitial fibroid lying fairly low in the pelvis and had two pedunculated fibroids higher up. Hysterectomy was done in this case, and as I was amputating the uterus I remarked to my assistant that the pedicle did not become smaller as rapidly as usual, and as I amputated the uterus a fold of membrane presented, and taking a scissors and making the opening larger, I found a three months' fetus wrapped in the membranes along with the three tumors.

The third case was seen in consultation with Dr. Rieg, of Toledo, the woman being three months' pregnant, with a fibromyoma about 4 inches, I should judge, in diameter lying below and posteriorly. This case was saved for Cesarean section, but about three weeks later she aborted, and as Dr. Rieg expressed it to me the fetus, when delivered, was as flat as a pancake, where it had crowded out from the cervical canal in front of the tumor. That woman became infected, and while not presenting bad symptoms at all, as the symptoms began to increase, subsequently we did a hysterectomy.

A fourth case, which was the most interesting one of the

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series, was seen with Dr. Lasalle in consultation. This woman, at the time she miscarried, was supposed to be seven months pregnant from all reckonings. About the end of the second month of pregnancy she complained of some distress, and at times of pain in her pelvis. She had a little temperature almost continuously from that time until she was delivered. She lost in flesh. She lost in strength, and for about six weeks before the miscarriage she was confined to bed. She was delivered at noon of a dead, macerated, ill-smelling fetus, apparently of about five months' duration. During the afternoon of that day the temperature gradually rose. The family physician telephoned me late in the night, and I advised that she be sent to the hospital immediately, and this was done and we made a section early in the morning. Her uterus contracted down. I will say, however, when the patient entered the hospital there was a nasty vaginal discharge, a disagreeable odor, and considerable broken down tissue in the discharge. When I saw this woman in the morning her abdomen was greatly distended. Her bowels had not moved since she had been delivered. There was almost continuous vomiting; pulse was rapid and thready; conditions were all very bad, but on opening the abdomen I found the uterus had contracted down to about 3 1/4 inches in diameter. Just above it was a broken down fibromyoma which had ruptured into the abdominal cavity. There was an opening in the upper portion of the tumor about 1 1/2 inches in diameter. The abdomen seemed to be literally filled with broken down tissue. In fact, I scooped out two double handfuls of this material and threw it into the basin. This was one of those cases where one feels that as little manipulation as possible must be done in the abdomen, and yet it was a case that required a great deal of manipulation. Although the operation of hysterectomy was done, a big bicycle tube drainage was placed in the pelvis, two smaller ones in the kidney pouch, the patient was put in the upright position with bolster under her knees to keep her from slipping down, and continuous salt solution maintained for several days, the woman making a beautiful recovery.

The fifth case was seen about the fourth month of pregnancy, with a tumor situated low in the uterus. The fetus was supposedly situated above. We watched that case, carried it through to full term, and three days before the time expected we operated, doing an elective Cesarean section, with good results.

The sixth case was a woman who was five months' pregnant, who consulted me last Monday. She was taken to one of our hospitals, and her abdomen opened for the removal of a fibroid tumor. It was found she had a fibroid tumor about 3 inches in diameter which was situated posteriorly. She was also pregnant. The attending physician had known, however, before pregnancy that she was carrying this tumor, and she had increased a good deal in size, and it was supposed that this increase in size was due to the increase in the tumor, and for

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that reason hysterectomy was thought of, but was not done. The tumor was returned, the woman did not abort, and apparently was in very good condition, and we have her waiting for a Cesarean section.

DR. LEWIS C. MORRIS, Birmingham.—I think the views and conclusions of the essayist are eminently conservative in character. I have had two cases which I would like to mention in connection with this paper. The first case was a woman, four months pregnant, with a pedunculated fibroid tumor, in which a twisted pedicle occurred, associated with violent pain. The woman came to operation. The myoma was about the size of the pedicle.

The other was a case of fibroid tumor in the left side of the lower uterine segment in a woman who had gone to term, and had been in labor forty-eight hours when seen. She was completely exhausted and labor pains had practically stopped. The pelvic outlet was blocked by the fibroid. A Cesarean section was done. This woman had been examined innumerable times and unquestionably puerperal infection had been introduced into the uterus; a Saenger Cesarean section was done, and this is the only one of my series of seven cases of Cesarean section that died on the fourteenth day after operation from puerperal septicemia. Had I done a Porro Cesarean section I believe I would have saved the woman's life.

In my clinical work in the South, where we have a preponderance of negro women over white women, there is no question in my mind but that there is a greater number of fibroid tumors among negro women than among white women; but it is a fact, in all my experience in operating on myomatous fibroid tumors in negro women, comprising some 300 or 400 cases, I have never known a negro woman to have any difficulty in delivery in the presence of fibroids. I have seen a number of them who became pregnant. I have an opportunity in the South of doing clinical work at the college and in so doing I observe a large number of negro women. The white women of the South do not go to our charity hospitals and the greater number of the gynecological cases in the charity hospitals in Birmingham are made up of negro women and I should say, my clinic covers seven months of operative work in the Charity Hospital, and about 90 per cent. of my operative work will consist of hysterectomies or myomectomies for fibroid tumors and pus tubes on negro women. The other 5 per cent. will comprise other gynesic conditions. In one case of twisted pedicle the patient was a negro, and in the other the tumor was situated in the uterine segment, interfering with the child, occurred in a white woman. Negro women deliver themselves without the slightest trouble.

DR. LOBENSTINE (closing the discussion).—I wish to thank the gentlemen for the thorough manner in which they have discussed this subject. My reason for presenting this paper to

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the Association was merely to accentuate a few points, that appear to me of some definite importance.

The first one was, that myomectomy or hysterectomy is seldom required during pregnancy. Secondly, the great majority of cases will proceed normally through labor. We have records of many cases of myomata of large size, which still allowed the birth of the child, in the normal manner. Delivery from below may thus be accomplished, at times, even in the presence of large submucous growths; but this procedure will prove dangerous, if *any force* is required to draw the child passed the tumor. These submucous myomata are especially liable to injury and to subsequent gangrene.

Finally, if we suspect infection of the myoma in the puerperium I feel that it is unwise to wait too many days for the acute symptoms to subside. If, after a few days, of conservative treatment conditions do not materially improve I would strongly advise operation.

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TWO RIGHT-SIDED FEMORAL HERNIAS IN THE SAME PATIENT.

BY

N. STONE SCOTT, M. D.,

Cleveland, Ohio.

THE mere fact of two hernias, whether existing or coexisting in the same patient, is quite unnoteworthy. Ferguson reports operating twelve hernias for a patient at one time. But there are many forms of hernia that are rare; so many in fact, that the finding of some form of rare hernia is by no means uncommon, paradoxical as that may sound. Their rarity, however, makes them none the less important; some of them because of their own peculiar problems, and some because they are liable to be overlooked when located in the vicinity of a more common variety, or to be mistaken for such.

The case I wish to report will of necessity limit my remarks to femoral hernia; and your attention is first called to a certain variety in which the hernia is situated external to the blood-vessels. The majority of authors use the terms "complete" and "incomplete" to signify the extent of the progress of a hernia through the abdominal wall; a few, unfortunately, make use of the adjectives "external" and "internal." Such a confusion of terms caused a good friend of mine to think he had found, in the literature, a case of this sort which might be of assistance to me, although it proved to be of the common complete variety. I have followed the phraseology of the majority of authors, using the terms complete and incomplete to denote the extent of the progress of the hernia from within out; reserving the terms "external" and "internal" to signify the relationship of the hernia to the blood-vessel; an external femoral hernia being one which descends by the side of the vessel farthest from the median line of the patient, while the internal femoral hernia is situated on the side of the bloodvessel nearest to the median line. So far I have been able to find but one case reported in the literature of this external femoral hernia.

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The common form, the internal femoral, passes under Poupart's ligament, internal to the femoral vessels, the sac of peritoneum lying on the pectineus muscle with a prolongation of the fascia iliaca interposed, as well as the pectineal portion of the fascia lata, and covered by the extension downward of the fascia transversalis. In the external hernia the sac descends into the groin external to the bloodvessels, but the relationship to the other structures is the same as in the internal hernia. Ferguson, in his excellent monograph on hernia, gives an unusually exhaustive list of the varieties; under femoral, he gives the form which descends internal to the bloodvessels anterior to and posterior to these vessels, but says nothing about the variety external to the vessels. The one case, already mentioned, which I have found in the literature, is described by F. F. Brichard in his System of Surgery (page 601). After speaking of the common form, he says:

"But there is another form of femoral hernia passing underneath Poupart's ligament which, though rare, deserves to be described and kept in mind by all surgeons who interest themselves in the subject in hand. In this variety the sac, instead of being forced downward into the groin to the inside of the femoral vessels, is protruded external to them and internal to the anterior superior iliac spine."

Complete or incomplete femoral hernias internal to the bloodvessels are found on both the right and left sides in the same patient at the same time. Of such multiple femoral hernias every experienced operator can give numerous examples. It is my privilege, however, to report a case of multiple femoral hernia consisting of an internal and an external hernia, both situated on the same side of the patient. This case is, so far as I have been able to learn, the second to be reported of the external femoral hernia, but the first with a combination of the two varieties, external and internal, and those both on the same side.

History.—Miss W. Aged thirty-seven years, a trained nurse, from the State of Michigan, gave an exceptionally clear account of herself. The family history showed no tuberculosis, cancer, or hemophilia; a grandfather and one uncle suffered from hernia. The ordinary diseases of childhood she had passed through, including diphtheria at twenty-four years of age, following which there was a temporary partial paralysis. Otherwise her health was exceptionally good. She menstruated first at thirteen years of age and has been regular since. Two years prior to

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consulting me she first noticed a hernia. It was never very large, being at its maximum the size of a small hen's egg, and was easily replaced. She had noticed that the tumor seemed to vary considerably not only in size but in position, or as she expressed it, "It seems to come at different places at different times." After wearing a truss for a number of months, she went to Ann Arbor and was operated. Within a few weeks a hernia again appeared and without any apparent etiological factor. She described this manifestation as different from her previous experience in that the hernia always appeared in the same place.

Physically she was in good condition, there being no evidence of internal disorder of any kind. Heart and lungs, thyroid, nervous system, digestive, excretory, and genitourinary systems were all apparently normal. In the right groin was noted an oblique scar, some 3 inches long, evidently the scar of an operation for the relief of a femoral hernia. Toward the outer end of this a weakness of the abdominal wall could be discerned, and on standing or straining the hernial sac protruded noticeably.

A diagnosis was made of right femoral hernia; this was operated in June, 1909. A well defined sac was found emerging from the abdomen external to the bloodvessels, and beneath Poupart's ligament. On examining the site of the old incision it was evident that the first operation was performed for the ordinary form of femoral hernia, where the sac emerges internal to the bloodvessels and that the operation had been entirely successful, so far as that hernia was concerned. It was also evident from the location of the scar tissue that the site of the hernia external to the bloodvessels could not have been previously explored.

In operating I followed the same general principles as in the ordinary variety of femoral hernia, Poupart's ligament and the fascia below were overlapped and stitched. Up to the present time there has been no return of the hernia.

Judging from my experience in this case the operative problem of the external is no more difficult than that of the internal variety; in fact, the operation for the two forms of femoral hernia at one time, the external and internal, seems hardly more difficult than the operation for either alone, except that greater care needs to be taken in order to prevent constrictions of the bloodvessels. We have here a case of external complete and internal complete hernia occurring on the same side, the patient's right side. Following the first operation they were

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not coexistent, but from the history of the case it seems probable that prior to that time they were coexistent.

The points of especial interest as illustrated by this case are: 1. The rarity of external femoral hernia. 2. The importance of making a correct and accurate diagnosis. 3. The possibility of the coexistence of an external and internal femoral hernia on the same side of the patient. 4. The ease of overlooking the external when it is associated with the internal or more common form. 5. The operative technic of the external femoral hernia, not essentially different from that of internal femoral hernia. 6. And, lastly, where both varieties are operated on the same side, the great care necessary to prevent interference with the functions of the bloodvessels.

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A BRIEF ANALYSIS OF NINETY CASES OF PUERPERAL ECLAMPSIA AND A CRITICAL REVIEW OF THE TREATMENT OF THIS DISEASE.

BY

E. GUSTAV ZINKE, M. D.,

Cincinnati.

WITHIN the last few years the dictum "empty the uterus as soon as possible in every case of puerperal eclampsia no matter at what period of gestation" has gone forth. This position is still held by the distinguished obstetrician, Bumm, of Berlin, and other eminent European authorities. With the exception of Hirst's, all recent obstetric text-books of this country recommend this treatment of puerperal eclampsia as the most important feature in the management of this disease. McPherson, of New York, lately reported 250 cases of puerperal eclampsia, and takes the position that the best treatment of puerperal convulsions is to empty the uterus promptly. This is not good teaching. To counteract the tendency to surgical intervention in every case of puerperal toxemia, I beg leave to present a brief analysis of my own experience with this obstetric complication.

During the thirty-five years of my practice, ninety cases of Puerperal Eclampsia have come under my observation. Of these, thirty were my private patients treated at their homes; forty-four were consultation cases; thirteen were treated at the Ohio Maternity Hospital and Out-door Obstetric Clinic of the Medical Department of the University of Cincinnati, two at the Good Samaritan Hospital and one at the German Hospital.

From 1875 to 1888, as a general practitioner, I saw ten cases; from 1888 to 1896, as Chief of the Out-door Obstetric Clinic, twenty-eight cases; from 1896 to 1910, as head of the Obstetric Department of the University of Cincinnati, fifty-two cases.

Prior to the year 1903, my method of treatment of puerperal convulsions did not differ materially from that recommended in text-books and generally endorsed by the profession. It consisted, principally, of chloroform-inhalation during the

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attack, catharsis per os or per rectum as soon as it could be effectually administered, hot baths, hot packs, and chloral per rectum. Venesection in two cases, morphia in large doses in one case, emptying of the uterus by the use of forceps or version and immediate extraction of the child if the patient was in labor, were resorted to. Manual, metal, or balloon dilatation, deep cervical incisions, or vaginal Cesarean section if the end of term was not near and labor not apparent, were also employed. Norwood's tincture of veratrum viride was also frequently given but invariably in connection with other drugs, and never in the large doses as recommended fifty years ago by Baker, and since then by Reamy and a few others. Though a pupil of Prof. Reamy and knowing his method of using veratrum viride in puerperal eclampsia, I was aware that the profession of Cincinnati, as well as that of the entire country generally, was highly prejudiced against the physiological action of this drug. Consequently, I was very timid in the use of this remedy, notwithstanding the fact that Roberts Barthelow, then in the zenith of his fame as a practitioner, lecturer, and medical writer, strongly recommended this drug with the statement that excessively large doses had been taken, accidentally, without fatal or even untoward results.

It was not until 1903, after I had observed sixty-four cases of puerperal eclampsia with a maternal mortality of 40 per cent., and a fetal mortality of 50 per cent. that I determined to give Norwood's tincture of veratrum viride a thorough trial.

From 1903 to the present time twenty-six cases of puerperal eclampsia have come under my observation with a maternal mortality of but 15.78 per cent., and a fetal mortality of 53.88 per cent.

ANALYSIS OF THE FIRST SIXTY-FOUR CASES.

Of the sixty-four women treated prior to 1903, forty-eight or 75 per cent. were primiparæ; sixteen or 25 per cent. were multiparæ. Eighteen or 28 per cent. were unmarried.

In twenty of these patients, the convulsions occurred three times during the seventh calendar month; seven times during the eighth month; ten times during the ninth month.

In forty-two cases the convulsions supervened eight times during the eighth month; thirteen times during the ninth month; and twenty-one times at the end of term.

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In one case the convulsive seizure occurred immediately after the expulsion of the child; in another case, an hour after labor. The antepartum convulsive seizures were observed from one to five times in ten cases, from five to ten times in five cases, from ten to fifteen times in three cases, from fifteen to twenty times in two cases. The intrapartum convulsions occurred from one to five times in three cases, from five to ten times in fifteen cases, from ten to fifteen times in twelve cases, from fifteen to twenty times in eight cases, from twenty to twenty-four times in four cases.

The postpartum attacks occurred only once in one case and twenty-four times in another; in the former, both mother and child lived; in the latter the mother died at the end of twenty-four hours.

Eleven of the above sixty-four cases were in my care three to five weeks before the eclamptic attacks. In each of them prodromal symptoms were noticed from several days to three weeks prior to the convulsive seizure. Strict prophylaxis had not been observed in any of them. In most instances, before as well as after the symptoms had manifested themselves, the diet prescribed was not strictly adhered to and, in some cases, hot baths could not be given and the hot pack and other modes of securing diaphoresis were inefficiently administered. A slight albuminuria, with moderate swelling of the extremities and edema of the external genitalia were the earliest and most frequent symptoms. Anemia, tinnitus aurium, severe headaches, dimness of vision, etc., were marked in two cases only. All of the remaining fifty-three cases were treated either by myself, the attending physician, or the midwife, after one or several eclamptic seizures had taken place. Not one of them had had prophylactic care. Treatment began with or after one or several attacks and was continued, with more or less regularity and vigor, until the patient either recovered or died.

The maternal mortality of the antepartum convulsions was 45 per cent., nine out of twenty mothers died; the fetal mortality was 65 per cent., thirteen out of twenty children died.

The maternal mortality of the intrapartum convulsions was 28.75 per cent., twelve out of forty-two mothers died; the fetal mortality was 38.95 per cent., sixteen out of forty-two children died.

The maternal mortality of the postpartum convulsions was

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50 per cent., one out of two mothers being lost; the fetal mortality was nil as both children lived.

Thus the total maternal mortality of the above sixty-four cases is 34.37 per cent. The fetal mortality is 45 per cent.

It is freely admitted that, while at least in fourteen cases the severity and frequency of the convulsions may be held responsible for the fatal issue, in not a few rapid manual and metal dilatation followed by immediate extraction of the child, too much chloroform, morphia, chloral, brisk catharsis, excessive diaphoresis, and occasionally hemorrhage and sepsis were contributory causes to the unfortunate results. The writer feels compelled to acknowledge that in the management of these sixty-four cases, he relied too much upon the teachings of the various text-books and the opinions of his seniors in practice and, in his anxiety to save his patient from the destructive influences of the disease, he overwhelmed them with drugs, with too many hot baths and hot packs and too frequent, early operative interruption of pregnancy.

ANALYSIS OF THE LAST TWENTY-SIX CASES.

Of the twenty-six cases which have come under my observation since 1903, eighteen were seen in the private practice of other physicians, or in my own practice, both in the city and in the country; five of them were treated in the Ohio Maternity Hospital and Out-door Obstetric Clinic of the University of Cincinnati, two were treated at the Good Samaritan Hospital and one at the German Hospital.

Of these twenty-six cases, twenty were primiparæ, seven were between the ages of sixteen and twenty, four were between the ages of twenty and twenty-five, five between the ages of twenty-five and thirty, three between the ages of thirty and thirty-five, one was over forty years of age, eighteen of them were unmarried. The ages of six multiparæ were, respectively, twenty-three, twenty-four, twenty-six, twenty-nine, and thirty-six years. Of these, two were II-paræ, two were III-paræ, one a IV-para and one a VI-para. All of the multiparæ, except one II-para aged twenty-nine, were married.

In seventeen cases premonitory symptoms, more or less characteristic of puerperal toxemia, were present from two to eighteen days prior to the eclamptic seizures. Seven cases were not under observation prior to the attacks, and two appeared

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to be in perfect health up to the very hour in which the convulsions set in.

Antepartum convulsions were observed in eight of the patients; during the seventh calendar month, in two cases; during the eighth calendar month, in one case; during the ninth calendar month in five cases.

Intrapartum convulsions were noted in eighteen patients; during the eighth calendar month in four cases; during the ninth calendar month in six cases; at the end of term, in eight cases.

The number of antepartum convulsive seizures were from one to five attacks in two cases, from five to ten attacks in four cases, from ten to fifteen attacks in two cases.

As observed the intrapartum seizures were from one to five attacks in nine cases, from five to ten attacks in seven cases, from ten to fourteen attacks in two cases.

Postpartum convulsions, strictly speaking, were not observed except in three cases in which the intrapartum attacks continued after the child had been born. In one case there was one attack; in one case, two attacks; in one case, five attacks. Labor was spontaneous in all of them, and the three children lived. In the first case one convulsion occurred during the second stage of labor; in the second case two convulsive seizures took place intrapartum; and the third case had four attacks before the child was born. These three patients were first seen by me after the second stage of labor and in none of them was veratrum viride given until the placenta had been expelled. No convulsion occurred in any of the patients after the pulse had fallen to 60 per minute or lower and all lived.

Because of the frightful maternal mortality of the sixty-four cases treated prior to 1903, I determined to give veratrum viride a thorough trial and to employ it as recommended by Baker, Reamy, and others in conjunction with the moderate use of hot baths, hot packs, strict milk diet, and free but not exhaustive catharsis. In every case, no matter how many convulsions the patient had had, 20 drops of Norwood's tincture of veratrum viride were given hypodermically and repeated every hour until the patient's pulse was reduced to 60 per minute. When the pulse showed a tendency to rise again, another dose of from 10 to 15 drops was administered and repeated every hour until the pulse was again down to, or below, 60. As long as the pulse remained at 60, or a little less, the veratrum viride was withheld; but as soon as the number of beats increased, another dose of

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from 10 to 15 drops was promptly given, occasionally per os, but usually under the skin.

In some cases the patients responded promptly to the action of the medicine. In one case after the patient had suffered fifteen attacks, in another after eleven attacks, in a third after nine attacks, a single injection of 20 drops of Norwood's tincture of veratrum viride was sufficient to bring the patient's pulse down to 60. In none of these three patients did the convulsions recur after the first injection had been given, the repeated smaller doses were necessary to keep the pulse down. With the aid of milk diet, one hot bath and hot pack daily, and moderate catharsis, these three patients recovered promptly and delivered themselves spontaneously within three to six days. In one instance, the child was born alive within seventy-two hours. In this case the first large injection and a number of smaller subsequent doses were made after the fifteenth convulsive attack. In the other two instances, the children were born dead, life having been extinct some time prior to birth.

In some of the cases, two and even three 20-drop doses had to be given every hour to overcome the enormous blood-pressure and the rapidity of the heart's action. A continuation of the veratrum viride, in smaller doses, repeated at varying intervals for days and weeks, was required in several instances to keep the patient's pulse at 60 per minute. In one case (Dr. Rowe's), a primipara, æt. twenty-four, the convulsions began at the end of the seventh calendar month. The veratrum viride was given three to four times daily in doses of ten to fifteen drops, in conjunction with milk diet, one hot bath and one hot pack daily, for a period of nearly two months. The patient was edematous from the soles of her feet to the top of her head; the urine was loaded with albumin and full of all kinds of renal casts; but at my request the veratrum viride, milk diet, hot baths and gentle catharsis were continued in spite of the urgency of the symptoms. This patient delivered herself of a dead child about the middle of the ninth month and recovered completely after a slow convalescence of several months' duration.

In another case (Dr. Webb's) the patient, æt. twenty-one, I-para, had nine convulsions within six hours. The bladder contained only a few drops of thick, heavily albuminous urine and renal casts of every description. She had been unconscious for two hours when I first saw her. Temperature 105°, pulse 150. The first injection of 20 drops of Norwood's tincture

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of veratrum viridi promptly reduced the pulse to 60 per minute. The patient was at once transferred to the Ohio Maternity Hospital where she received, immediately, a hot bath followed by prolonged hot pack. After that, consciousness returned, kidneys and bowels began to act, and with only one hot bath daily thereafter, milk diet, and gentle catharsis this patient delivered herself of a dead eight-months' child five days after the first large dose followed by several smaller doses of veratrum viride.

In the third case (Dr. John Miller's) a II-para, æt. thirty-seven, seen quite recently at the Good Samaritan Hospital, I found the patient unconscious after the seventh attack. Temperature 101°, pulse 90. This patient had been, apparently, in perfect health, very strong and robust, up to the hour of the onset of the eclamptic seizure. The urine, loaded with albumin and casts, was very scant and of a dark brown color. Chloroform had been administered during each attack. Duration of the gestation eight months. No labor pains. Os tightly closed. Upon consultation it was determined to depend on Norwood's tincture of veratrum viride, hot baths and hot packs, milk diet, and gentle catharsis. This patient delivered herself spontaneously of a dead child on the fourth day after the convulsions and made a rapid recovery.

Of the twenty-six cases just analyzed, only four mothers were lost (15.38 per cent.). Of the twenty-six children, fourteen were lost (53.88 per cent.). Two facts are thus made apparent: noninterference with gestation and a strict medical treatment of purperal eclampsia decreased the maternal mortality more than 50 per cent., while the fetal mortality shows a comparatively small but distinct increase. With the abandonment of violent interruption of gestation and the various surgical methods of treating puerperal eclampsia and substituting a less multiform, more gentle and expectant mode of procedure, aiding labor, rather than inducing it or violently interrupting pregnancy, the maternal mortality has been strikingly reduced even though, it appears, somewhat at the expense of the fetal mortality. But the latter may be more apparent than real.

Of the four mothers lost, two died undelivered, respectively during the seventh and eighth months of gestation and within three to twelve hours after the first convulsion. One remained unconscious after the first, the other after the seventh attack. One had eleven and one had three paroxysms. Both were

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moribund when first seen by the writer. Of the other two, one died of shock and hemorrhage, the result of a protracted and violent attempt at delivery by a colleague of good repute. This patient expired one-half hour after my arrival and should, in reality, not be incorporated in my list of cases. The second died in consequence of an accouchement force which I was compelled to do for the reason that the patient lived far out in the country, ten miles from the nearest doctor and in the most unfortunate and unfavorable environments. The message was, "Come as soon as possible and be prepared to do a Cesarean section." Upon my arrival I learned the nature of the case. Under the circumstances Cesarean section (not considering other contra-indications) would have been a fatal procedure. It was impossible to convey the patient to a hospital. Seventeen convulsions had preceded my visit. The patient, aet. nineteen, primipara, seven months pregnant, was unconscious, very anemic and edematous. Temperature 104.2°, pulse 160. No urine in the bladder. The doctor and the family were extremely anxious to have an operation performed without delay as, in their opinion, that was the patient's only chance of life. The physician in the case had firmly impressed this upon the family. As the patient was evidently doomed, rather than be damned for not interfering, I took the bull by the horns and proceeded without much ado to make a vaginal Cesarean section, which is one of the quickest and gentlest modes of emptying the uterus at this period of gestation. The operation was easily performed and delivery promptly accomplished. The child was born alive, but died within six hours. The mother never regained consciousness and died within one hour and forty minutes after the operation, probably of hemorrhage or edema of the brain. The operation was performed without an anesthetic. This unfortunate woman had received seven hypodermics of 1/4 gr. of morphia each, and chloroform had been liberally administered during every convulsion.

The third patient died of septic infection one week after the last (ninth) convulsion. This patient was brought, in an automobile, a distance of twenty-three miles, to the Ohio Maternity Hospital. She was a primipara, æt. twenty-six, pregnant seven and a half months, well built and muscular, but very anemic. There was considerable edema of the lower extremities and of the external genitalia. Temperature 102°, pulse 115. Two attempts at delivery with the fingers and with the balloon

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had been made within the last twenty-four hours. The balloon was still *in situ* when the patient arrived at the hospital. She was conscious but very much frightened. After a full bath and sterilization of the parturient tract, she was found to be in labor, the os almost fully dilated, the membranes ruptured, and the child dead. The death of the child must have occurred some time before the arrival at the hospital, as the skin of the fetus peeled off readily. Forceps were applied under chloroform. No laceration of either cervix or perineum. After a copious intrauterine irrigation of a 1 per cent. solution of lysol, she was placed in bed in fairly good condition. The patient died, however, of a profound septic infection, one week after delivery.

The fourth (Dr. Bange's case) æt. thirty-three, III-para, very strong and robust, pregnant eight months. She had only one convulsion of long duration from which she never regained consciousness, dying within three hours of the attack with all the symptoms of cerebral hemorrhage.

The principal causes of the high fetal mortality in the last series of cases must be sought in the prematurity of the births and the toxicity of the maternal organism.

In relating my personal experience with puerperal eclampsia, no attempt has been made to speak of the etiology or pathology of the disease. Nor have all the remedies employed in the treatment of this affliction been mentioned. We know something of the causes, but precious little of the character of the poison or its origin, notwithstanding the extensive and continued investigations by good men the world over. Nor has it seemed to me proper to consider on this occasion all the remedies suggested and used from time to time. It is hoped that the discussion will bring out much that the writer has left unsaid. The sole object of this paper is to record the author's experiences and the deductions he has drawn from them. The latter are as follows:

1. All cases of puerperal eclampsia are not alike; much depends upon the extent the kidneys and liver are involved. The so-called "malignant form," as the term implies, is fatal from the beginning; the so-called "benign variety" ends in recovery, sometimes in spite of the treatment adopted. The variety of "mean gravity" is, without doubt, favorably influenced in its course by careful and judicious treatment.

2. The prognosis for both mother and child is much worse when the convulsions supervene during pregnancy, the ma-

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ternal mortality ranging between 35 to 50 per cent.; the fetal mortality, between 65 to 75 per cent. The prognosis of intrapartum convulsions is more favorable, maternal as well as fetal, and amounts to about 25 per cent. The maternal mortality of postpartum convulsions is, as a rule, about 7 per cent.. (In my own experience, having had but two cases, it is 50 per cent.)

3. The most important treatment of puerperal convulsions is prophylaxis before the appearance of symptoms as well as before the eclamptic attacks when prodromal signs exist. The patient must be protected from injury during the convulsions and the duration and frequency of the paroxysms should be controlled and abbreviated, medicinally rather than surgically. Veratrum viride in sufficiently large doses is the remedy *par excellence* to reduce the blood-pressure and the pulse frequency. Hot baths and hot packs judiciously employed, and free but not excessive catharsis, strict milk diet and the recumbent position, are of almost equal importance.

4. Chloral in large doses per rectum, if the patient is very restless during the interval of the attacks, is an effective remedy. Chloroform inhalations, especially if of long duration, should be regarded as a source of great danger: the same may be said of frequent and large doses of morphia, both of these drugs have their ardent advocates.

5. The antitoxin treatment (the thyroid, parathyroid extract and nephrin) may play an important part in the future in the treatment of eclampsia. "What advance should veratrum viridi and nephrin and parathyroidin prove, some day, to be synergetic!" (Archambault.)

6. Saline and sugar-water instillations can do no harm and may do a great deal of good.

7. If, of late years, the maternal mortality of puerperal eclampsia has been reduced at all, it is the direct result of careful prophylaxis and intelligent medical care. Surgery has contributed very little to it. The dictum "Assist in labor, but do not induce it" or "Treat the convulsion and let the pregnancy take care of itself" is better than the dictum "Empty the uterus as soon as possible in every case of puerperal convulsions no matter what the period of gestation."

8. Decapsulation of the kidneys, manual, balloon, and metal dilatation, especially the old-time accouchement forcé are, in

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the opinion of the writer, hardly justifiable and should have no place in the treatment of puerperal eclampsia.

9. If, however, the symptoms are very threatening and the medical care above described fails to bring about promptly an amelioration in the patient's condition, an early delivery may be desirable; if the patient be near term, but not in labor, the conservative Cesarean section should be selected; if the patient is just within the period of viability, vaginal hysterotomy is the proper procedure; if the fetus is not viable (before the end of the sixth month of gestation) deep cervical incisions will easily relieve the uterus quickly of its contents.

10. No one has a right to perform any of these three operations unless experienced and familiar with the technic of each. And, in every instance, the patient must have the benefit of strict asepsis. Without these requirements, it is best to rely entirely upon the medical care above outlined.

Dr. Wm. Gillespie, of Cincinnati, was kind enough to furnish me with a brief synopsis of his experience with veratrum in eclampsia.

He has had eighteen cases in which the toxemia was of sufficient severity to immediately threaten life. All yielded to veratrum as soon as an adequate dosage was given. In no instance had he noted convulsions which were not under control within thirty minutes. The dose given has varied from 50 ♏ to 120 ♏. of Norwood's tincture, administered subcutaneously, but it has seldom been necessary to go beyond 1 dram, unless its antidote, morphia, had been given. He has had but four fatal cases (22 per cent.), two in the first half and two in the last two months of pregnancy. One of the early and one of the later cases had convulsions. In both of these veratrum promptly relieved the convulsions, but in one, the toxemia increasing, Dr. Bonifield emptied the uterus. This patient died. The other case of early toxemia was associated with persistent vomiting, which finally yielded. The patient died, when about 5 months advanced, with symptoms of cerebral edema, which were not improved by artificial emptying of the uterus.

Of the later cases, one had been in serious danger from an attack of nephritis some months before the pregnancy began. When he first saw her she was within seven weeks of the calculated time of delivery. A day or two later she telephoned him that her head was paining her severely and upon going to her home he arrived in time to see her go into convulsions. The

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convulsions were immediately controlled by veratrum. Seven weeks later labor ensued. During this whole time her general condition improved under the constant administration of veratrum, so much so, that he did not feel justified in inducing labor. She was having an easy labor until the first expulsive pain occurred, when she was taken with a tetanic spasm which did not relax until life was extinct. The child was extracted with forceps and appeared to be normal, but twelve hours later it died in a convulsion which was described by the nurse as identical with that of the mother.

The other case suffered from tuberculosis before the development of toxemic symptoms. Urine loaded with albumin and casts, general edema and asthma with pulmonary edema. Veratrum relieved the bronchial spasm, the pulse becoming slow and full, the cold extremities warm and less edematous. Urinary findings remained the same except that the quantity excreted was increased. This fact and the improved general condition of the patient was sufficient to justify a policy of expectancy even if it had not been re-enforced by the religious scruples of the patient. One morning he was called to find her with congested lungs and copious expectoration of blood-tinted froth. An hour later, in his absence, she suddenly died with every symptom of edema of the glottis.

This completes his experience with fatal cases of toxemia of pregnancy and in none of them is there any reflection upon the drug employed.

In the remaining cases he has seen everything from the slight convulsion, followed by a period of perfect consciousness, to the rapidly recurring violent seizures and gradually deepening coma. His invariable rule is to use 25 ♏ of Norwood's tincture of veratrum (or preferably "Veretrone" because of its greater reliability and the less irritation produced) followed by 15 ♏. every ten minutes until the patient is brought profoundly under the influence as indicated by the slow soft pulse, sighing respiration, and copious vomiting of bile-stained fluid. Unless these symptoms are produced, the full benefits of the drug have not been experienced; if these symptoms are produced convulsions cease and will not recur so long as the arterial tension remain low. It is a clinical fact, however, that after four hours have elapsed the arterial tension and pulse rate may mount very rapidly, and these are danger-signals which should be met by the immediate vigorous application of the drug.

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Because of these facts it has, of recent years, been his custom to give 15 ♏. of Norwood's tincture every four hours beginning three or four hours after he has stopped the convulsions. If the patient does not need it, it is soon thrown up and serves to keep the liver on the job of toxin destroying. As the dangers of eclampsia are not passed for two weeks after labor this administration of the drug by the mouth is never discontinued for that length of time, though the dose may be lessened if no danger signals appear and the stomach is kept upset by them. But as prevention is always more important than cure, he who only uses veratrum after the onset of convulsions fails to reap its full benefit.

At the first appearance of albumin in the urine he is in the habit of giving the drug in sufficient doses to lessen the arterial tension and continues it to the completion of pregnancy. The dose varies from 8 ♏. to 15 ♏. every four hours and, of course, is accompanied by rest, diet, etc.

The functional activity of the kidney is usually increased and the percentage of albumin is diminished after its administration. Like myself he has seen several cases where the toxemia resulted in the death of the child, yet nearly all of his cases in which the pregnancy continued for some time after the onset of toxemic symptoms, have been delivered of perfectly healthy children.

The death of the child has generally been followed by prompt improvement in the symptoms of the mother, but this can not always be regarded as cause and effect. There is ample evidence scattered through the literature of this disorder to show that an acute toxemic storm usually lasts in its full intensity not more than forty-eight hours. Some children will die within this period, more will be prematurely expelled, but if the dangers are warded off until this period is past, there is usually a general improvement in the patient's condition even though the pregnancy continues. For this reason he never forces labor, preferring to obviate the immediate dangers, and to await a safer time for action. As a result of this policy, many of his patients have delivered themselves within twenty-four hours of the onset of convulsions, and in many cases the labor was so easy that it was only recognized when the external parts began to distend. Since recognizing the full significance of these facts, he has induced labor in no instance. He would do so, however, if there was no marked improvement after the storm was passed, or if at any time there was a progressive increase in the trouble with the kidneys as indicated by the urinary findings. He has

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seen a number of cases weather the storm and go on in an improved condition to full term under the constant influence of veratrum, but with the beginning of labor the arterial tension increases and during the second stage such cases will almost certainly develop convulsions unless the drug is pushed to its full effect at this time. A pulse of forty per minute, vomiting and sighing respiration, while it appears alarming to the inexperienced, is no contraindication to the administration of chloroform. This is his method of handling all cases which have shown signs of kidney insufficiency. While many such cases have been placed in his hands by the family physician because of fears that eclampsia might occur, and the number of such cases greatly exceeds those previously considered, only one patient has developed convulsions and that at the single instant when the perineum was at the point of greatest distention.

DISCUSSION.

DR. HENRY SCHWARZ Saint Louis.—I endorse everything that our worthy President has said as to the importance and the character of this paper, and I can add my own testimony to many of the points that Dr. Zinke has brought out. In particular, I take great pleasure in testifying to the good effect of prophylaxis when prodromal symptoms manifest themselves, and in my opinion we have been able to reduce the occurrence of eclampsia greatly both in clinical work and in private practice by insisting on placing the pregnant woman under observation. Even in my out-clinic practice, the women are forced to report or they are looked up, and their urine is examined, and they receive general rules how to conduct themselves during pregnancy; especially with out-clinic patients is it necessary to give these general rules as to cleanliness of the skin, keeping the bowel open, and the like. We instruct them to live on plenty of fruit and plenty of vegetables, and to drink plenty of pure water. I am sure by so doing we have greatly reduced the number of cases in which albuminuria shows itself. The most valuable feature of these cases is the early observance of the first traces of albumin, and as soon as these traces are detected a more or less strict milk diet is insisted on, according to the quantity of albumin present. A small quantity of albumin is not alarming, but an increasing quantity calls for an absolutely strict milk dietary, with the addition of a little water, and a great many of these cases lose their albuminuria permanently. I know the presence of albumin is not always an indication of approaching eclampsia, and that the albuminuria is never causative, but simply an accompanying symptom, but is sufficiently often present to be worthy of the greatest attention.

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I can likewise attest to the correctness of Dr. Zinke's statement as to the value of Norwood's tincture of veratrum viride, because there are preparations which will not be effective. I have used it, and it is wonderful how a hypodermic injection of 20 minims will bring the pulse down below 60, even if it is away up.

I differ radically and emphatically with Dr. Zinke in his statement that at any time during pregnancy, whether the woman be pregnant one or nine months, when she has had a number of convulsions, that we have a right to hesitate five minutes to empty the uterus.

The life of the fetus is never worthy of consideration in these cases. Even in Dr. Zinke's series of cases the fetus was not saved often. The nature of the eclamptic cases is that spontaneous delivery often takes place at a time when the fetus is not viable, so that the great fetal mortality is of course largely due to the prematureness of the fetus. But if there is one thing that experience in the last decade has brought out, it is that the prompt emptying of the uterus will in the majority of cases save the woman's life. The statement is not quite correct that this has been known thirty years. I have known it ever since I began to practise, but it is only in the last ten years we have felt absolutely safe in approaching any case of eclamptic convulsions. Before that period, there were cases in which we were unable to do a safe delivery. But such cases no longer exist.

We may differ as to whether we favor the Bossi dilator, or whether we favor so-called vaginal Cesarean section. But since the addition to our means of treatment of these two methods of dilatation by steel dilators, and the opening of the cervical canal by so-called vaginal Cesarean section, we feel in every case we can deliver a woman where there is no opening whatsoever, where we can only pass a sound through the cervix, we can deliver her within a few minutes, if we must, with absolute safety.

I do not like Dr. Zinke's statement that some of the cases which he lost were due to the method. These were simply cases that were too far gone. Some of his cases had been infected by manipulations outside of the hospital, and for which Dr. Zinke is not responsible. It is our duty to see that in general practice these criminal acts of handling women without strict asepsis cease. It is our duty to teach practitioners and students the handling of instruments, so that any of them can either use a Bossi dilator or can do a vaginal Cesarean section. After a woman has had convulsions, I hold that it is our duty to deliver her, especially in some of those cases where unconsciousness follows the convulsion. A great many of the convulsions which women have during labor are not eclamptic, nor are they epileptic, hysterical, or nervous. On the other hand, convulsions which are purely eclamptic always call for (according to my own experience) immediate delivery.

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With reference to the method of delivery, that matter must be determined in every case. We all had a time when we were aching to do one of these vaginal Cesarean sections, but we were often disappointed by the time we got the patient on the operating table. We find a great many cases of women who have convulsions in whom the cervix is fairly open and soft and yielding, and on whom it would be a shame to do any of these operations. A little stretching either manually or with the Bossi dilator will fulfil the first requirements of complete dilatation before you proceed to deliver. In other cases multiple incisions, perhaps high incisions, will suffice, so that the number of cases in which a real vaginal Cesarean section becomes necessary is extremely limited. But the addition of these two methods to our means of helping women in this calamity gives us that one feeling of absolute assurance in approaching these cases which is so necessary in order that we should do our full duty. Before that time it seemed justifiable to follow the suggestion of Olshausen and do a classical Cesarean section in some of these cases of puerperal convulsions. At present, that indication for Cesarean section in my opinion no longer exists.

In all other points I fully agree with the essayist. I agree with him as to the abuse of chloroform and morphine in these cases. Morphine is an excellent thing to give at first. When you are called up by telephone in a case of convulsions, if there is a nurse at the other end of the telephone, instruct her to give a hypodermic of half a gain of morphine, or to give a few whiffs of choloroform until you get there, but use it only as a preliminary to complete anesthesia.

I likewise agree with the essayist as to the valuable help we derive from chloral hydrate. It not only helps to keep the convulsions in check, but you know the more attacks a woman has had the more likely is she to have changes in her liver and several organs which will not allow of restoration to perfect health, and the chloral hydrate, besides its beneficial influence on softening and relaxing the pelvic floor, seems to make delivery more easy.

DR. K. ISADORE SANES, Pittsburg.—According to the statistics of Dr. Zinke, the mortality of his antepartum eclamptic women was from 25 to 45 per cent. and of the postpartum eclamptics 7 per cent. The fact that the mortality in eclamptic patients in which convulsions occur after delivery is so much less than in those in which the convulsions occur before the delivery indicates the advisability of prompt induction of labor in eclamptic cases.

DR. ZINKE.—When I spoke of 7 per cent. mortality, I had reference to those cases in which the convulsions occurred after labor was completed, and none occurring before; and the other percentage of twenty-five, to both mother and child, where the cases in which convulsions occured antepartum while the

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women were in labor, or some distance ahead or prior to the end of term.

DR. SANES.—These statistics demonstrate nevertheless that the convulsions after labor are not as injurious or dangerous as convulsions before labor. It is advisable therefore to put an eclamptic in a postpartum state as soon as possible. Vaginal Cesarean section is of course not the treatment for eclampsia after childbirth nor is it the treatment for eclampsia during active labor when the uterus is already dilated; Dr. Zinke will agree that for eclamptic woman with a dilated uterus, forceps or version delivery is the proper procedure.

It is for the eclamptic women prior to labor, or just in beginning labor, that the vaginal Cesarean is recommended. The operation does not take much time and the additional loss of blood from the incision can do no harm to an eclamptic patient. Frequently (when the patient is unconscious) even an anesthesia is not required for the operation. Why then should we refuse to do a vaginal Cesarean Section in this class of cases?

DR. H. WELLINGTON YATES, Detroit.—I congratulate Dr. Zinke on his excellent paper, knowing his great ability as a clinician and his capabilities as a surgeon, as well as his analytical makeup and his acute observation. This association, I understand, is for the purpose of advancing such opinions in regard to operations as would be applicable to the country doctor. As a general principle, when men are properly equipped, such a paper and such discussions as this are apropos. That is my interpretation of it.

I was rather surprised at Dr. Schwarz not mentioning other causative factors in eclampsia, and that he made, on the other hand, so much of the finding of albumin in the urine. In my small experience I have found that in many instances we do not have albumin showing itself in the urine, or if we do, the excess is not greater than in very many of the ordinary cases of confinement; that the woman goes on until nearly the time of delivery, and all through the parturient state we have examined her urine at different intervals, yet suddenly she develops eclampsia. I believe such cases are those where we must suspect at least either a faulty metabolism or increased metabolic changes on the part of the infant, or perhaps toxins from the placenta. There are cases such as I have outlined where eclampsia comes on in the later stages of pregnancy, one convulsion occurring after another, where the uterus should be emptied promptly, and as members of this association, it seems to me, we should go on record as being in favor of doing vaginal Cesarean section in every case of this particular type when necessary.

I have nothing to say in regard to the technic. I heartily congratulate Dr. Zinke upon his admirable paper.

DR. FRANK DEWITT REESE, Cortland.—If not out of place

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I would like to ask Dr. Zinke a question—namely, if he would advise operation in those cases of pregnancy where disease of the kidney was well established in the second and third month. Would he then advise emptying the uterus?

DR. ZINKE (closing the discussion).—I have but one desire, and that is to get at the truth of things. Whatever may prove the best method of relieving these unfortunate sufferers, I will gladly welcome and employ in these cases. I have taken a positive stand against surgical intervention in the treatment of puerperal eclampsia. Statistics clearly show that surgery has not reduced either the maternal or fetal mortality. If the patient be in labor, whether at term or not, the sooner the uterus is emptied the better. If she is not in labor nothing is gained by interfering with the pregnancy. You have no guarantee that the convulsive attacks will cease after the uterus is emptied.

In reference to the question asked by the gentleman on my left (Dr. Reese) as to nephritis, well advanced at the time pregnancy occurs, I will state that this may not affect the course of gestation at all. I have attended and safely delivered women who had serious kidney lesions at the time they became pregnant. They went to the end of term, delivered themselves spontaneously and without convulsions. Experience has shown that careful prophylaxis, and intelligent medical care during the attacks have given the best results. I would not hesitate myself to perform vaginal Cesarean section, or even the conservative Cesarean section, if I were convinced either were sure methods of relief. I do not wish to say anything to hurt the feelings of my friend, Dr. Schwarz, nor would I speak disrespectfully of the admirable work done by our confrères abroad, or of McPherson, of New York, but when they speak of the Bossi dilator as a safe and reliable instrument, and extol emptying of the uterus as the only proper procedure in the treatment of puerperal convulsions, then it is time to assert in unmistakable terms that they have erred in their conclusions.

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CHOICE OF DELIVERY IN MODERATELY CONTRACTED PELVES.

BY
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FEW men in general practice take more than passing interest in the question of pelvic deformities because they claim to see so few of them. They think them infrequent because they never look for them or never investigate the cause of many difficult labors and still-births.

German observers have noted from 8 to 24 per cent. of contracted pelves of all kinds and while statistics in America do not show so many as noted abroad, from those obtainable it is fair to conclude that 7 to 8 per cent. of white women have a contracted pelvis. Litzman says that any pelvis with a conjugata vera of 9.5 cm. or less in flat, or 10 cm. or less in generally contracted, should be considered contracted. Williams, in Baltimore, noted that one in fourteen white women and one in six colored women presenting themselves at Johns Hopkins, had a contracted pelvis. Crossen of St. Louis reports 8 per cent. and Davis of Philadelphia reports 25 per cent. in 1224 cases, though these latter were based on external measurements only.

Regarding the relative frequency of types of contraction, the generally contracted or justo minor and the simple flat are the most frequent. Snowden in 532 cases of pelvic contraction noted that of the generally contracted, 25 per cent. were in white women and 49 per cent. in colored, while of the simple flat 20 per cent. were in white and 50 per cent. in colored. From the above it is evident that many cases of moderate contraction are never recognized. Even in our large cities, few men ever measure the pelves of their patients, even primiparæ and probably less than one in 500 in the towns and villages. Yet one teacher in a postgraduate school says that these men have their share of difficult forceps cases, versions, craniot-

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omies and vesicovaginal fistulæ—proof positive that they have cases of pelvic contraction. When men doing obstetrics more generally make thorough examinations and take the pelvic measurements before labor, there will be a lower fetal mortality, less maternal morbidity, and fewer women invalided for years. The pelvimeter is as necessary to the armamentarium of the obstetrician as the stethoscope is to the internist.

With the rarer types of pelvic deformity or with pelves having an internal conjugate of 7 cm. or less, it is not our purpose to deal in this paper, for in such the indications for operation are absolute. One of the problems of obstetrics, however, is the proper management of cases with moderate degrees of pelvic contraction, and cases with normal measurements yet relatively contracted by reason of the child being over large. The real problem is the management of these cases when they have been recognized early, for when the case comes under observation first in labor or perchance exhausted from labor, the choice of procedure is limited. In studying the problem, there are several factors to be considered; the size of the pelvis, the size of the fetal head, the compressibility and malleability of the head, the probable uterine power and nervous energy of the patient, and the duration of pregnancy. Whereas external pelvimetry does not give us accurate data as to the diameter of the inlet, it does give us some idea as to the type of pelvis with which we have to deal and where one finds normal measurements by external pelvimetry, the internal conjugate is not apt to be small, especially if at the same time we find the head engaged at the inlet.

Given a pelvis with external measurements below the average in any respect, it is our duty to make a careful internal examination to determine the diagonal conjugate from which the true conjugate is gotten by deducting 1.5 cm. None of the various instruments devised for getting this measurement have proven practical, as the use of them is too painful for our American women without an anesthetic. The difficulties in the way of determining the relative size of the fetal head are many. If the head four to six weeks before labor is well engaged, we need have little fear of disproportion, though Stone has noted cases where a week or two before labor it had been engaged, but from pregnancy being prolonged it had risen again and from its oversize had given rise to dystocia. Various methods for measuring the fetal head have been proposed.

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Perret devised an instrument for taking the occipitofrontal diameter through the abdominal wall, deducting 2 cm. to get the exact measurement. Stone proposes an ordinary pelvimeter, subtracting 2 cm. when the measurement is 11 cm. or less and 2.5 when it is over 11 cm. Pinard, after measuring a large number of fetal heads, found the average biparietal diameter to be 8.25 cm. at the thirty-sixth week of pregnancy and 9 cm. at the foretieth, but here one meets with the difficulty of calculating accurately the duration of pregnancy and date of confinement. Bearing on this, in addition to the usual rules based on the date of the last menstruation and quickening, McDonald has recently published the results of his new method of calculating the duration of pregnancy.

"The duration of pregnancy in lunar months is equal to the height of the fundus of the uterus in centimeters divided by 3.5." He finds this very exact after the sixth month. The measurement is taken with the patient lying flat on the back and one end of the tape is placed at the upper border of the symphysis, while the other is held by the thumb into the palm of the hand, the fingers of the upper hand being held at right angles to the uterus. Thirty-five cm. is the usual height of the fundus at full term with a fetus of 3300 gm. and for every centimeter of height above 35, add 200 gm. In cases of moderate degrees of pelvic contraction or of ordinary pelves yet relatively contracted on account of over large child, the knowledge thus gained by these methods is valuable, enabling one to fix the probable duration of pregnancy and size of the fetus.

The determination of the relative size of the head is probably best gotten by Müller's method of manual engagement of the head. This is painful for most women, and difficult where the abdominal wall is thick or resistant and to be accurate should be done under an anesthetic. An assistant forcibly pushes the head against the inlet while the examiner by combined external and internal palpation estimates the relative disproportion between the head and pelvis, and the possibility of the head engaging under good pains. If the patient is put in Walcher's position, the maximum enlargement of the inlet is secured. During the last two weeks of pregnancy there is a marked increase in the hardness of the cranial bones and therefore a decrease in the compressibility of the head, which in slight degrees of contraction is an important factor. Some women are ill equipped for labor on account of inherited muscular and nervous weakness.

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Careful observation of a patient throughout pregnancy will often enable one to predict that she will not bear the strain of labor well. Every year we see cases that require instrumental help on account of inefficient pains or because they go to pieces under much pain. These ill equipped women are mostly among our private patients, women who are seldom sick yet never rugged, lacking in reserve energy.

Having determined at the eighth month that the pelvis of a given patient is moderately contracted one should reexamine her weekly in order to see that it remains possible to engage the head at the inlet, and that when it once stays engaged, it continues so until the advent of labor, especially when pregnancy is prolonged beyond the expected date. As stated above, it is hard to estimate the compressibility and malleability of the fetal head or to predetermine the character of the expulsive forces and it is a matter of record that in many, in fact in the majority of moderately contracted pelves, spontaneous deliveries take place. Voorhies, quoting Sloane Maternity statistics, cites 972 cases of contracted pelves in 10,000 patients, and of these 645 or 66.3 per cent. terminated spontaneously. Edgar noted 70.5 per cent and Williams 71.58 per cent. where spontaneous delivery took place. Williams analyzed his cases and found that where the true conjugate measured 10 to 9 cm. 77.25 per cent. were delivered spontaneously; those from 8.9 to 8 cm., 61.54 per cent.; and those from 7.9 to 7 cm. only 33.3; while of those below 7 cm. none were delivered spontaneously. These statistics are the same, practically, as noted by other observers, so that it is very evident that the farther away the pelvis is from the normal, the less frequently do we get spontaneous delivery. Furthermore, as between flat pelvis and a generally contracted one, spontaneous delivery is more frequent in the former as all observers hold that 0.5 cm. more must be added to the generally contracted pelvis to make it the equivalent of the flat pelvis.

In private practice, the percentage of spontaneous deliveries is less than in hospital cases, for these patients are more often less well equipped for labor. The real problem before us, then, is the management of approximately 30 per cent. that need help but, before taking up the solution of the problem, a word should be said as to the maternal and fetal mortality of these cases ending spontaneously. Taking the figures of several observers, the mortality in the mothers is about 0.75 per cent.

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and the fetal mortality increases with the degree of pelvic contraction, averaging from 11 to 13 per cent.

In approaching the solution of the problem of the 30 per cent. not only the maternal and fetal mortality must be considered but the immediate and remote effects on both the mother and the child. The specialist has two classes of cases coming to him for consideration, those that have been under his care and observation throughout pregnancy and in whom, therefore, he has discovered pelvic contraction early, and those seen in consultation, seen for the first time after labor has been in progress, subjected to many examinations or even instrumental efforts, after indifferent asepsis often. For the first, three methods of procedure are available: the induction of premature labor at such time as will ensure a live child, one that will have good chance of survival under proper care; second, a pubiotomy; and third, a Cesarean section. Each method has its advocates and defenders, and no one method can be adopted exclusively. Williams never induces labor in contracted pelvis and Bar and Pinard have also discarded it. Norris believes that in moderate degrees of contraction, 8 to 11 cm., it is indicated but never before the eighth month. It is in these cases of moderate contraction that the percentage of spontaneous deliveries is high and those opposed to induced labor feel that one is justified in giving nature a chance. The mortality in induced labor is practically nil so far as the mother is concerned, but for the child it is not inconsiderable, the per cent. depending on the length of time before term it is induced. Voorheis reports thirty-eight cases, private, with minor or moderate degrees of contraction without a fetal loss. Norris reports 76.6 per cent. of babies alive after two to ten years in thirty-nine cases of labor induced for contraction. To get such results, as Voorheis aptly says, the pelvis must not be too small nor the child too premature. Labor should not be induced before thirty-sixth week and preferably not before the the thirty-eighth. As to the pelvis, premature labor should not be induced where the internal conjugate is under 8 cm. nor should it be induced in any case where the head cannot be pressed down into the pelvic inlet. Premature children bear instrumental delivery badly, therefore this must be avoided when possible. Voorheis has been especially successful in the handling of premature infants and few have approximated his results, so that the merits of the procedure must be judged by the ultimate fetal mortality, which according to Norris is 24 per cent. Some

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operators claim a fetal mortality of 50 per cent., but these are based on hospital statistics where the care of the child has not been the best possible. The immediate mortality in induced labor, not earlier than thirty-sixth week, is about 10 per cent.

Pubiotomy has not become popular in this country and from the scanty literature the past two years has not gained in favor greatly abroad. Williams has been its most ardent champion in this country, though Norris and Fry and a few others think it has a place.

Symphysiotomy has passed into disrepute and many think that this new operation has little to commend it and that it, too, will soon be little heard of. Pubiotomy is undertaken chiefly in the interest of the child and the fetal mortality, maternal mortality, and morbidity must determine its justification. Williams in his paper before the American Gynecological Society in May has collected the latest statistics, which are herewith given. Schlafli analyzing 700 cases of pubiotomy, all the cases reported in literature, finds a maternal mortality of 9.18 per cent. and a fetal of 4.37 per cent. after making justifiable corrections; and he concludes that elective pubiotomy should be condemned, to be resorted to only after the test of labor has shown the inability of the patient to deliver herself. Williams believes that the above statistics do not give the operation its due as they are the results of 142 operators, many of whom did the operation but once. In justification of his contention, he cites the following statistics: In 1908, Bumm reported fifty-two pubiotomies with one death; Hoehne, twenty with one death; Schauta, thirty with one death; and in 1909, Reifferscheid, thirty with one death; Baisch, forty-two with one death and Williams, himself, twenty-five with no deaths, a total of 199 cases with four deaths, or 2 per cent for the mothers and a fetal mortality of about 4 per cent.

Had we a Williams or a Bumm in every large city, the operation might become more popular. As these cases, however, cannot be transported to the few men getting this low mortality but must be handled by men who in the nature of things cannot get many such cases for operation even in a decade, the statistics cited by Schlafli must determine the value of the operation in the hands of men with less material and so less experience. So far as the child is concerned, the mortality is from 4 to 5 per cent. though this does not take into account the possibilities of injuries to the child from forceps.

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Other factors to be considered in the operation are the morbidity, the possible injuries to the perineum from forceps and the after results to the mother from cutting the pelvic girdle. Williams reports an abnormal puerperium in 55 per cent. of his cases, though in but one case was there serious illness, and from the statistics of other operators, the operation seems to predispose to infection. The dangers to the mother as noted by various observers are as follows: hemorrhage from injuries of the vesical plexus, deep vaginal tears, injuries to the bladder, incontinence of urine, hematoma of the labia, phlebitis, and hernia. As for the remote effects, only one of Williams's patients had difficulty in walking after a period of nine months, and the other twenty-four were able to walk and work as usual after a few months. Definite motility, showing fibrous union was noted in two-thirds of the cases after some months. As would be expected, the lighter patients had less immediate difficulty in walking. As to the permanency of the pelvic enlargement, about 50 per cent. showed permanent increase of from 1 to 2.5 cm. between the tuberosities of the ischia. Even Williams does not consider the operation an ideal surgical procedure, but it is a valuable adjunct in the treatment of borderline cases of contraction, in that the test of labor can be pushed and then the patient operated on with little risk to the mother and with the prospect of saving 90 per cent. of the babies. Save in those cases where the saw is placed before applying forceps, Williams believes that it should be considered a primary operation and not be resorted to after ineffectual attempts to deliver otherwise. In definitely infected cases, the mortality varies from 3 to 17 per cent. and as the child in such cases is probably not in the best condition, the risk to the mother is too great for the operation, and if the child cannot be delivered by forceps one is justified in doing a craniotomy.

The third possible solution of our problem is through a Cesarean section, and the period at which it is done determines whether it is a primary, secondary, or late section. When the operation is done before term, it is considered elective or primary, secondary when the labor has begun, and late when patient has labored long but in vain. Primary section or early secondary gives the lowest mortality and it increases with the duration of labor. Reynolds reporting 289 cases collected found a mortality of 1.2 per cent in eighty-two primary sections; 4 per cent. in 158 secondary sections and a mortality of 12 per cent. in forty-

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nine late cases. Without considering any classification, Voorheis cites 172 sections by eight operators with a mortality of 1.2 per cent. while a series of 508 cases by twenty-seven operators showed a mortality of 6.49 per cent.; but if moribund and those definitely infected before labor are excluded, the mortality is reduced to 3 to 4 per cent., while the fetal mortality is practically nil.

The dangers of Cesarian section are those common to any laparotomy in addition to such as might arise remotely in the event of future pregnancy from the presence of a thin scar in uterine wall. Whereas, a few cases of rupture of uterus have followed at subsequent labors, a much larger percentage of patients have gone through one or more later labors or been subjected to other sections without accident. Sepsis, adhesions, pyemia, phlegmasia, abscess of uterine wall, ileus, are all dependent for the most part on the stage of labor at which the operation is done, and the possibility of infection before operation. Cesarean section gives a live baby, the *sine qua non* of every successful obstetrical operation for contracted pelvis. Where the infant is dead or dying, Cesarean section is contraindicated for, as in pubiotomy, the maternal risk is too great. Fry well says, "the great needs of modern obstetric surgery are to see cases early, recognize the possible necessity for Cesarean section, and to conduct the labor accordingly." The majority of men in general practice do not get their patients into the surgeon's hands until interference must be classed as late, when the dangers to the mother are increased tenfold. Careful examination of our patients before labor enables us to determine whether the head will engage, and if at the beginning of labor it can still be engaged it may be possible to have a spontaneous delivery; but where the head cannot under chloroform be made to enter the inlet, a Cesarian section should be done without delay.

As all operative obstetrical work looks to the saving of the child, our study would not be complete without reference to high forceps and version in contracted pelves, and bearing on this Voorheis states that at the Sloane Maternity the fetal mortality for high forceps was 43.2 per cent. and the maternal was 1.8 per cent.; while in version, the fetal was 49.5 per cent. and the maternal 2.1 per cent. In view of these statistics, one does not wonder at the decline of these procedures especially when in addition to the above, cervical lacerations occurred in 40 per cent. and extensive perineal tears in 36 per cent.

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CONCLUSIONS.

Every primipara and every multipara with a history of difficult labor or still-births, should be carefully examined six weeks before term, to determine the size of pelvis and of fetal head and if disproportion is feared weekly examinations should be made thereafter, to see that the head can still be engaged. In doubtful cases one should not hesitate to resort to an anesthetic to make certain of disproportion. In multiparæ with above history, labor should be induced at the latest possible period, not earlier than the thirty-sixth week. If the disproportion is such that labor induced at this period does not give promise of delivery without the use of forceps, it would be better to wait until term, then do a primary or early secondary Cesarean section.

Primiparæ with moderate contraction should be given the test of labor, provided the head can be engaged by Muller's method.

The test of labor should be conducted with rigid aseptic technic, such that the best interests of the mother and child will be conserved in case operative interference is finally required. If after a few hours of good pains, the head does not mold or advance, operative assistance is indicated.

Unless a skilled operator is available and if delivery will require a difficult forceps operation in addition, pubiotomy is contraindicated. In a small percentage of cases, pubiotomy, in the hands of skilled men, will be chosen in cases of slight disproportion between the pelvis and fetal head, but it will tend to be done less and less. When in doubt as to the best procedure, resort to Cesarean section. Patients with relatively contracted pelves, on account of over large child from prolonged pregnancy, will require Cesarean section unless disproportion is recognized early enough to induce labor at term. In contracted pelves, high forceps and version are indicated as a last resort in cases of moderate contraction, where pubiotomy and Cesarean section are contraindicated. Craniotomy is never indicated save on a dead or dying child, in order to save the mother.

Appended are brief histories of two cases leading writer to the above study of contracted pelves.

Mrs. V., aged thirty-nine years, short and slight in build, gave history of two pregnancies, seven and five years previously, both children weighing nine pounds, and delivered with instruments after much difficulty. In later months of last pregnancy relaxed abdomen became pendulous, and binder could not be

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worn with any comfort. Labor began at 5 A.M. August 10, case seen at 7 A.M. The head had not engaged and could not be made to engage. Pelvic measurements, between spines, 25 cm.; crests, 27 cm.; external conjugate, 19 cm.; and internal conjugate estimated, 10 cm. Patient was transferred to hospital. Operation by Dr. C. N. Smith. Cesarean section performed, patient made uninterrupted recovery. Child weighed nine pounds.

Mrs. D., age thirty-six, a primipara, 5 feet four inches, weight 180 to 190. During last week of pregnancy had some albuminuria, which under rest and diet improved but did not entirely disappear. External pelvic measurements were valueless on account of excessive weight. Head very slightly engaged a week before labor. Irregular weak pains on February 7 and 8, such that they did not tire the patient especially nor dilate the cervix.

Thorough examination under anesthetic morning of the ninth, shows cervix dilated three fingers, biparietal not such as to descend, and head very hard and noncompressible. Transferred to hospital. Cesarean section done. Child weighed eight pounds fourteen ounces. Mother at no time had temperature over 101.5 but was from first much distended and at no time was satisfactory bowel movement secured. Obstinate paresis of intestine persisted and death came at end of fifth day.

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SOME CLINICAL CONSIDERATIONS OF PELVIC AND PERITONEAL TUBERCULOSIS.

BY
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To those of us who have witnessed the renaissance of pulmonary tuberculosis it is apparent that tuberculosis of the genitalia has received but little attention if one considers the ubiquity of tuberculosis in general. Some idea of the frequency can be gained from the following statistics: in 6,000 autopsies at Parma tuberculosis was the cause of death in 1,360; 172 of these were females with genital involvement (12.6 per cent.). Frerichs gives the per cent. of primary tuberculosis of the female genitals at 6 per cent.; Mosler, 19.5 per cent.; Spaeth, 24.5 per cent. According to Still, 9.5 per cent. of tuberculous girls under twelve years of age have genital tuberculosis. Out of 1,600 pieces of tissue from Martin's Clinic in Griefswald which were examined for tubercle bacilli, they were found in twenty-four.

Genital tuberculosis may be either primary or secondary. By the former we understand that the focus in the genital apparatus is the only one in the body. In favor of primary genital tuberculosis are the facts that: *a.* otherwise strong, healthy people have primary manifestations in the genitalia. *b.* After removal of the local focus, patients remain well for years. *c.* Children, apparently healthy otherwise, have primary tuberculosis manifested in the genitals.

The primary is much less frequent than the secondary. Some authors absolutely deny the possibility of this form; others consider it very rare. The secondary form is frequent in phthisis. Thus Stolper in thirty-four autopsies dying from pulmonary tuberculosis found tuberculous lesions of the pelvic organs in seven, or 20.5 per cent. We owe to Hegar (Murphy) the two forms of genital tuberculosis, an ascending which is generally primary, and a descending which is generally secondary. For the production of the primary, the two following possibilities must be taken into account (Hegar):

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1. Penetration of germs from the outside directly to the mucosa of the vagina, uterus, tubes, and finally the peritoneum and ovary. 2. Penetration of germs through minute breaches of continuity in the general tract, into the lymphatics, thence into the Fallopian tubes directly against the lymph current or by way of the pelvic peritoneum into the tubes at the fimbria.

The sources of infection in general may be classified as by the blood, lymphatics, contiguity of tissue, and continuity of surface. The order of frequency with which the organs are involved is: tubes, uterus, ovaries, vagina, and vulva. So rare are the cases of tuberculosis of vagina, vulva, and ovaries, and they have only been mentioned in this paper as illustrating the modes of infection, that a consideration of genital tuberculosis draws our attention almost entirely to a study of tubes, uterus, and peritoneum.

Tuberculosis of the uterus is most frequent after that of the tubes. Merletti in 172 cases of genital tuberculosis found well marked lesions of the uterus in seventy-five. Stolper in thirty-four autopsies on tuberculous women found three cases, and Wolff in seventeen similar cases found three also. Cullen in eighteen months diagnosticated six cases from the clinic and in Marten's clinic where the mucosa is examined as a matter of routine, in 1,500 cases tuberculosis was found twenty-four times. In practically all reported cases the lesion in the uterus is secondary to one in the tubes, hence the portion of the organ about the orifices of the latter is most often involved.

The miliary form has been less frequently met than the others, but no doubt it has often been overlooked on account of the inconspicuous character of the lesions. Small tubercles are scattered over the mucosa; later on ulcers make their appearance and the mucosa may be partly or completely destroyed. In severe cases the mucosa is wanting and its place is taken by granulation tissue. The muscular layer often remains intact for a long time, but in extreme cases it also is partly absorbed, leaving merely a fibrous bag containing thick pus and caseous material.

Symptoms.—The symptoms show nothing striking or pathognomonic, but may be those of any chronic inflammatory trouble of the endometrium. Menstruation may be regular, suppressed or profuse. Much stress has been laid on amenorrhea as a strongly suggestive symptom. This has been contrary to what I have found in four cases operated on in the last year. In one case, the trouble dating from birth of child eighteen months

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previously, her menstruation occurred every three weeks, lasting from eight to ten days. Another had uterine hemorrhage for three weeks before coming to the hospital, while the other two have increased menstruation both in time and amount of flow. The profuse and intractable leukorrhea of both extremities of life is very frequently due to tuberculosis of the uterine fundus. The persistent and profuse leukorrhea of girls from ten to fourteen years of age occurring rather suddenly and resisting local vaginal treatment should always be suspected of tubercular origin, and careful examination of the discharge should be instituted. If these are negative, curetments should be made to determine the presence of bacilli.

At or shortly after the menopause profuse, ichorous, irritating leukorrhea, without hemorrhages, should be considered as indicative of tuberculosis of the fundus, and careful microscopic examination of the secretions and scrapings should be made. The treatment of this condition is unsatisfactory on account of difficulties in the way of early diagnosis and lack of unanimity among operators as to the proper method of pursuit. There are those who contend that after the first curetment from which the diagnosis was made, no other operative interference was necessary; while others insist that the only hope for the patient lies in total extirpation.

I quote from Williams who sums up the situation very concisely:

> " If we deal with a tuberculous endometritis, we should first satisfy ourselves that the tubes are intact. Any apparent inflammatory disease of the tubes, along with tuberculosis of the uterus, would indicate that they are likewise involved. If the process be limited to the uterus, we should curet at once, and if after this there is the slightest occurrence of the affection, there should be no question as to the propriety of vaginal extirpation of the uterus. In all such cases it is best to remove the appendages with the uterus, as it is impossible to tell whether they are perfectly healthy or not, especially in the light of great frequency of unsuspected tuberculosis of the tubes."

TUBERCULOSIS OF TUBES.

This is by far the most frequent variety of pelvic tuberculosis and is usually bilateral. As Hegar pointed out some years ago, the tubes are predisposed to tuberculosis by their spiral form and pleated mucosa which favors stagnation of secretions. A preliminary catarrh seems to enhance the chances of infection.

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The sources of infection are numerous from the peritoneum through the blood or lymph vessels and from outside the body. The normal constriction of the tube about 1/2 an inch from the uterus favors the arrest of bacilli at this point. Clinically this is the most frequent area involved and the pathological changes indicate that it is the primary focus in the tube. It is at this same point that the gonococcus infection is arrested and retained sufficiently long to destroy the mucosa and produce the stricture which is the most prominent etiological factor in gonorrheal pyosalpinx.

As the symptoms of uterine tuberculosis are practically those of endometritis, so the symptoms of tubal tuberculosis are in general those of salpingitis, to which are frequently added those of pelvic peritonitis. The pain is periodical, localized, though at times diffused, and is usually the reason for which advice is sought. Menstrual disturbances are, as a rule, not noticeable. In cases of simple tuberculous infections of the tubes the fimbriated end is not, as a rule, closed, but there is a marked periodicity of the attacks, accompanied by all the manifestations of an acute infection of the pelvic peritoneum—namely, soreness, pain, elevation of temperature, great sensitiveness on examination, and boggy feeling in the culdesac. It was Murphy who first pointed out that these attacks were due to the expulsion of tubercular debris from the tubes into the peritoneum. In a great majority of his cases of tubercular peritonitis with ascites in women, he found that the Fallopian tube on one or both sides could usually be found open, there being an eversion of the fimbria with thickening of tube and especially of the mucous membrane.

A discusssion of the treatment of tubercular salpingitis becomes superfluous without a consideration of tubercular peritonitis, which, from an etiological standpoint bears a very close relation. While the roads of access of the bacilli to the peritoneal tract are many—for example, through the intestinal blood current, the lymph channels, especially from the mesenteric glands and the genitourinary tract—as a general rule, it may be stated that in males the most common source of the infection is the intestine, next the genito-urinary tract; and in females, the genital tract, especially the tubes.

Mayo states that at the operating table he found about three females to one male with tubercular peritonitis. Osler gives the ratio 2 to 1, while Konig out of 131 cases reports 120 in women, 11 in men. On the other hand, Williams asserts that

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infection of the tubes is far more frequently the result than the cause of peritoneal involvement. Against any theories, whether this infection be ascending or descending, is the following quotation from Mayo:

> "Having under observation a small number of patients in whom simple laparotomy had failed in the permanent cure of tubercular peritonitis, we began to do a radical operation, performing hysterectomy with removal of tubes and ovaries. The condition of the uterus and ovaries on examination did not justify so mutilating a procedure, the tubes showed unmistakable evidence that they alone were the source of infection. It became clear that in tuberculosis of the peritoneum, in a very large majority of women, a lupus of the mucous membrane of the tube was a source of intection of the peritoneum. The peritoneal involvement is greatest in extent near the seat of local infection. This has been generally noted and heretofore ascribed to gravity. It is more likely due to the proximity to the seat of infection."

The treatment of tubercular peritonitis covers a large page both in medical and surgical history. Borchgrevick was one of the first to insist very strongly on the medical treatment, even to the point of condemning all surgical procedures. Fenger, in a most exhaustive study of the subject, sustained the opinion of Borchgrevick. So strong was he in his conviction that he regarded it in its more favorable form, the ascitic, as nonsurgical.

Against these conservative opinions is the overwhelming evidence of numerous operators, and the value of operative intervention can no longer be said to be in question. In discussing the results of treatment a distinct classification of the pathological conditions must be borne in mind and the following propositions must be considered: *a*. To remove or shut off the source of supply to the peritoneum of new tubercular material. *b*. To remove the products of the infective process from the peritoneum. *c*. To increase the tissue proliferation for the encapsulation of foci already present. *d*. To avoid mixed infection.

The three distinct types of the disease have been classified.

The Disseminated, Non-confluent Serous Variety.—In a great majority of cases, this variety is associated or due to tuberculosis of the tube. The fimbriated end of the tube is open and is constantly ejecting tubercular debris into the peritoneum. Medical treatment in these cases gives poor results and abdominal section *per se*, without removal of the tubes or induc-

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tion of an inflammatory process, which would exclude the tubes, is as futile as medical treatment. The prime indication in this class of cases is to remove the tube beyond the focus of inflammation. Murphy believes that it is important to have an inflammatory reaction following laporotomy if the case is to make a satisfactory recovery. This postsection reaction, he believes, is due to a fermentation of the secretion remaining in the abdomen causing an inflammation, irritation, and reaction in the tissues resulting in tissue proliferation which overwhelms and encapsulates the tubercular foci on the surface of the peritoneum. If the focus of supply to the peritoneum be a mesenteric gland or a periappendicular tubercle, the removal of the focus is indicated the same as removal of a tube.

Nodular.—In the nodular or ulcerative variety, a more or less diffuse tubercular peritonitis, usually of tubal origin but due to glandular infection more frequently than the ascitic variety, presents a healing of the peritoneum except in circumscribed areas, as at the ends of the tubes, between adherent intestinal coils and between the omentum and parietes. In these cases the process destroys the peritoneum, the intestinal wall or the tube, and produces a considerable sized caseous mass. These masses are usually surrounded by connective-tissue barriers and there is commonly a considerable quantity of fluid in the peritoneal cavity. In these cases, if the nodes are free and the peritoneum practically free from adhesions, *good results* are obtained from operative interference. The tubes should be removed, if possible, without any bowel laceration. The masses of tubercular infiltration should not be removed and great care should be exercised not to injure the intestinal wall and produce a fecal fistula. If the process is confined to single or adjacent coils of the bowel, the coil should be resected, otherwise the affected area should be excluded and allowed to remain. It is questionable whether surgery gives better results than medical in these cases, but it clears up the diagnosis and adds nothing to the danger.

Adhesive, Fibroplastic, Cystic.—The classification of cases occurring as adhesive, fibroplastic, or cystic with obliteration of the cavity is explanatory of the pathologic changes. It signifies that the process is severe in that it destroys the epithelial layer of the peritoneum and that the membrane has reacted to reparative cicatrization. In the milder types of this variety the peritoneal surface is gummed together with a mucilaginous

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substance, which, when separated, does not leave an abraded surface. If the process has been destructive the union is organized connective tissue and when separation takes place leaves an abraded, oozing surface. Circumscribed cysts form between the coils of the intestines and in the pelvis, which are sometimes mistaken for ovarian or broad ligament cysts.

Two of the four cases heretofore mentioned were of this type. When the abdomen was opened, and with considerable difficulty, as entrance to the peritoneal cavity could only be gained high at the umbilicus, a diaphragm was found stretched across the abdomen. Below this diaphragm were uterus, tubes, and ovaries. Pushing up of the diaphragm threw the bowels into the upper abdominal cavity. Puncture and opening of this diaphragm showed the bowels covered with a gummy exudate and considerable fluid. The subsequent history of these cases has been bad. One died from mixed infection and the other still lives without any improvement. Surgery avails nothing in cases of this type, but in cases where the infecting focus can be located and removed the prognosis is much better under surgical than medical treatment.

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PUERPERAL INFECTION, CLINICAL VARIETIES AND TREATMENT.

BY
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(With seven charts.)

OPPORTUNITY has been afforded the writer in his hospital practice for clinical observation of a series of severely infected puerperal women, and in many instances when on duty to direct their treatment. In the past six years on the Third Indoor Division of the New York Lying-in Hospital there have been 825 cases of morbidity of genital origin, the index of morbidity recognized by the hospital being any rise to 100.4° or over during the lying-in period. This is excluding temperatures due to definite breast or lung conditions or to extragenital infections. In two ways the morbidity may be described as legitimately larger than that of the ordinary maternity service, first by the admission of cases in labor that have already undergone attempts at delivery, and secondly by the admission of infected post partum women. The "septic" side of the service has thus become of value in presenting a wealth of material for study.

It has come to be recognized that early diagnosis of the cause of fever in the recent mother is difficult, and that many procedures widely employed in the treatment of puerperal infection are dangerous and of indefinite value. It is to aid in the appreciation of the variety and the extent of the infection present, as well as to discriminate in the method of treatment to be employed that this paper has been undertaken.

The only way in which we can make any progress with this complicated but all too common problem is to continue in our collaboration with the bacteriologist. We feel that great assistance has been given in the management of puerperal infection by the hospital laboratory in the details of culture and spread slide reports. It is true that the isolation of the offending bacterium is often of little apparent value. "Streptococci in uterus" cases get well and "sterile culture" cases die. Investigators argue that we are not justified in classing a case as streptococcic toxemia just because a few non-virulent streptococci are found on cervical smear

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or uterine culture. The quality and quantity of the particular woman's resistance, however, must be taken into account as well as the acquired virulence of the same non-virulent bacteria as they penetrate into wounded and devitalized tissues. When the attending physician knows what organism is at work he always

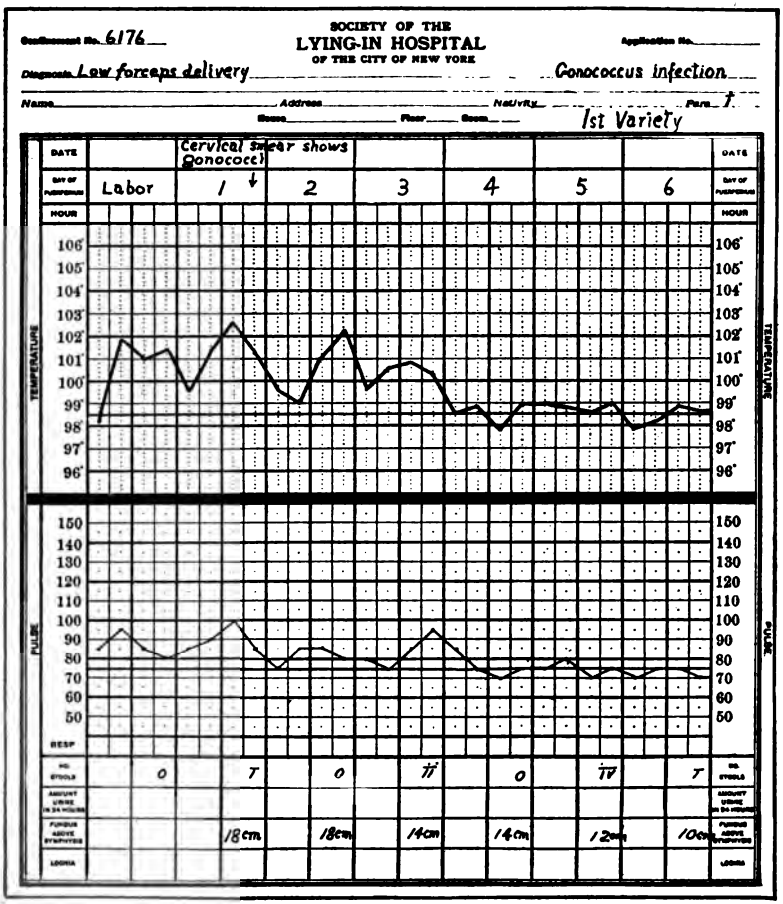

CHART I.—Temperature curve of gonorrheal infection of the early variety. Clearing up without sequelæ in the first week of the puerperium.

feels in better command of the situation. It helps him to judge when to be radical and when to be conservative in his attack if he is acqainted with the identity of the enemy. Certainly with our present knowledge of the subject the most exact index of the variety of the infection is the result of cervical and uterine smear

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and culture. On the other hand, the clinical picture of pulse, temperature and general condition is the correct index of the balance between the virulence of the particular strain of that organism and the resistance of the patient.

There were 225 women in which either the streptococcus, the gonococcus, the staphylococcus or the colon bacillus were found, and the discussion will be confined chiefly to these and to a number of cases with distinct pathological lesions but in which no organism was isolated. It might be well in passing to mention fifty-two instances of reaction temperature occuring in labor or immediately thereafter and falling to normal within the first twenty-four hours with no further rise during their stay in the wards. The higher rises to 103 and 104° were usually associated with foul and yellow lochia and were a true transient toxemia. The milder reactions occurring in severe labor or after operative procedures may be viewed as the temperatures of exhaustion or of the absorption of fibrin ferment. There were, however, seventy-one additional patients with an apparent reaction rise which as the case progressed either continued high or after the initial fall reappeared. So that it must be born in mind that a temperature beginning in labor or appearing within the first twelve hours cannot always be looked upon with equanimity as a reaction rise. It may be the first signal of a severe infection.

True bacterial toxemia including sapremia and without definite pathological lesions aside from birth injuries of the genital canal, occurred 317 times in the series. In 137 of these toxemias cultures of pathogenic bacteria were secured. In the remainder which were largely sapremic, either the cultures were negative for pathogenic bacteria or else no cultures were made.

Sapremias	180
Streptococcic toxemias	37
Staphylococcic toxemias	38
Mixed	18
Gonococcic toxemias	31
Colon bacillus toxemias	12
Staphyl. and colon	1
Total toxemias	317

Probably the most interesting group of toxemias were those in which the gonococcus was found in the vagina or cervix.[1] There

[1] The cases cited do not include any of those reported from the wards of this hospital by Stone and Macdonald in 1905.

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has been considerable discussion as to whether the gonococcus is such a frequent inhabitant of the genital canal of pregnant women as general statistics of the disease would indicate, also when present whether it is really of much importance as a patho-

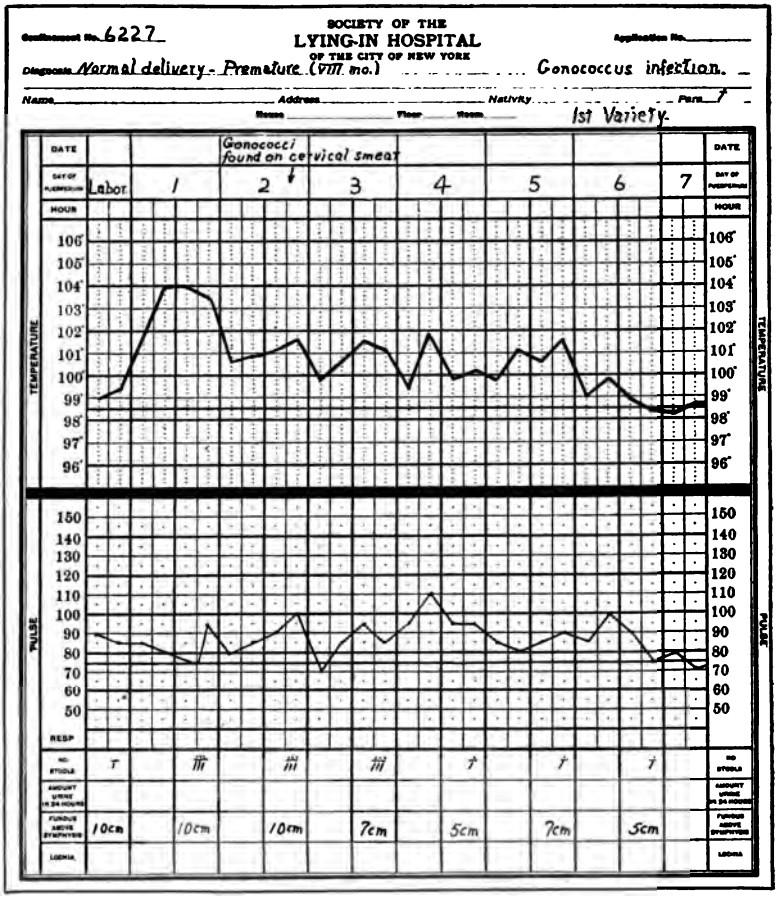

CHART II.—Temperature curve of gonorrheal infection of the early variety. Clearing up without sequelæ by the end of the first week of the puerperium.

logical factor in the puerperium. Our experience is not conclusive on either point, but such figures as it is possible to present are suggesitve.

Several years ago we took smear spreads from the cervix and vagina of every parturient on admission. The gonococcus was found approximately in 6 per cent. of all pregnant women. This

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is in close agreement with Williams's figures of 5 1/2 per cent. The experience of foreign observers seems to be much larger, (Leopold 20 per cent., Kronig 28 per cent.). At the time of this investigation about 40 per cent. of the women infected with gonorrhea exhibited a febrile course during their puerperium. In the six years we have had thirty-nine cases of fever in the puerperium with a gonorrheal infection. While it is scarcely possible to individualize this infection as a clinical type, it is quite noticeable that there are two varieties of the gonorrheal invasion to be clinically distinguished from each other. The first variety is the more common. The temperature rises during labor or on the first day and runs a course of six or seven days duration, approaching normal in the A. M. and reaching 101° to 103 or 104° in the P. M. The lochia is foul, of a musty, fetid odor; the pulse ranges a little lower than in streptococcic or colon bacillus infection, and there is the general picture of a bacterial toxemia. Futher trouble may be expected in 12 per cent. of such cases, usually in the form of pelvic abscesses with associated streptococcus infection and requiring posterior vaginal section and drainage. Rarely there may be an immediate tubal involvement following this type, but such extension is usually later and five of these women have had salpingectomies performed within eight months after their confinement.

The gonococcus may be found on cervical spread slides from the second to the fifth day. We found it most frequently as early as the third day. A pure infection of the gonococcus exhibiting this early clinical type will often resolve as a simple toxemia and leave the woman in good physical condition.

The second variety of the gonorrheal infection, not so common as the first, shows no rise in temperature or other disturbances during labor or for the first five or six days, and the woman seems to be running a normal course. At the end of the first week, however, from the fifth to the seventh day, the temperature suddenly shoots to 102° or more and there is severe pain and tenderness across the lower abdomen. It is this class that includes the greater number of adnexal complications. The gonococcus seems to have penetrated deeper before conception occurred and lying quiescent attains new vigor during the puerperal involution.

In 28 per cent. of such cases the infection is not limited to the uterus. Even more remote lesions may occur such as arthritis. One of our cases developed a typical gonorrheal arthritis of one elbow and the opposite wrist, delaying the convalescence for

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many weeks though finally subsiding without operative interference.

The most conservative treatment has proved to be the best when the gonococcus is present. Intrauterine douches are bad and a curettage of any variety is most dangerous. In several

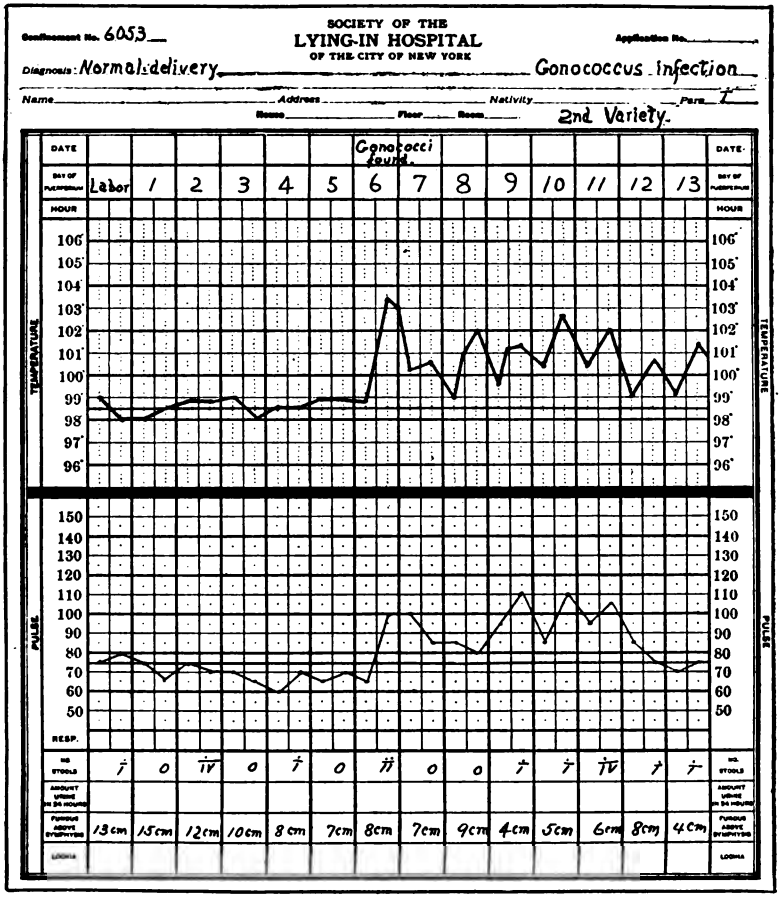

CHART III.—Puerperal gonorrheal infection of the second variety, symptoms not appearing until late in first week. Gonorrheal tubes were removed from this case eight months later.

cases there was a most suspicious connection between an intrauterine douche and a spread of the infection to the tubes a day or two later. The advisability of even vaginal irrigating with permanganate solution is questionable. The time for such treatment was before parturition. Cartharsis, elevation of the head

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of the bed and the ice-bag when pain or tenderness is present is the more appropiate management of gonorrheal toxemia.

There were also several cases admitted post partum suffering with gonorrheal infection that may be mentioned here to complete the group. One of these died with a complicating septic pneumonia having had a mixed genital infection of gonococci and staphylococci. This was the only death in this group. One had multiple abscesses of the uterus and recovered after a complete hysterectomy, the abscesses showing streptococci on culture. Two had posterior vaginal sections done for pelvic abscess. Our experience with the gonococcus thus agrees with those who maintain that this infection is often a serious one in the puerperium. Though a fatal issue is not common, the damage done is more permanent than that of the other infections and there is likely to be further trouble at a later date. The majority of puerpera who on their discharge examination showed thickening or tenderness in the vaginal fornices were those in which the gonococcus had been the destructive agent.

The common clinical picture produced by the colon bacillus is a severe toxemia beginning on the second to fifth day with a sharp rise of temperature, considerable prostration, and frequently with one or more chills. It is not especially distinguishable from the other toxemias except by the extreme foulness of the lochia, the odor being like that of colon bacillus pus from a bad appendiceal abscess. It is in this variety of infection that the intrauterine douche gently given has proven of greatest value. Twelve cases of colon bacillus toxemia were treated with intrauterine douches and responded well to one or more irrigations with normal saline solution. The change in the general condition within twenty-four hours after the adimnistration of such a douche was most convincing of the effectiveness of local treatment in this infection.

In the toxemia produced by the streptococcus the treatment with intrauterine douching or manual cleansing of the uterus has not met with success. In thirty-seven cases of pure streptococcic toxemia not one responded favorably to such local procedures. The cases of streptococcic toxemia that cleared up rapidly did so without any local treatment whatsoever, and in reviewing the other pathological conditions such as streptococcic pelvic exudate, peritonitis and bacteremia, the record of intrauterine douching or curettage is usually found antedating the later serious developments. In streptococcic toxemia without complications there is usually no chill, the rise in temperature begins before the

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fifth day, the pulse rise is high in proportion and the lochia is not foul unless there is an accompanying mixed infection or retention of sapremic secundines. The general treatment of toxemia without local specialization is the one to follow, *i.e.*, institute drainage by elevating the head of the bed and apply the ice-bag

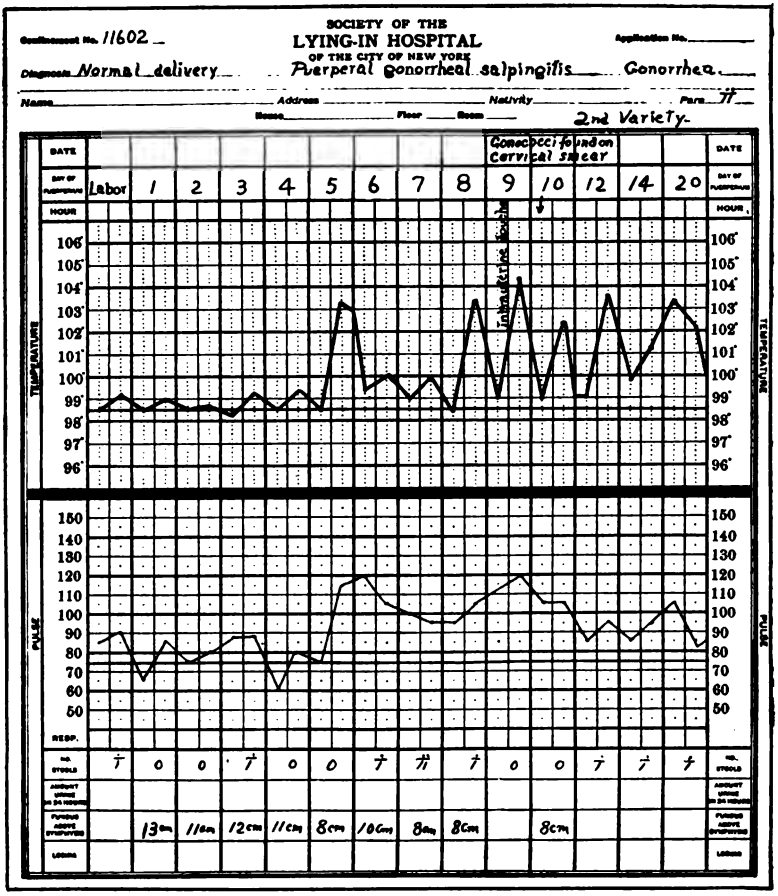

CHART IV.—Gonorrheal infection of the second variety. An intrauterine douche on the ninth day, before the identification of the infection, was apparently followed by extension to the tubes.

to the lower abdomen for the toning of the uterus and the relief of pain.

Staphylococcic toxemia without complicating lesions is rare and when present is mild in character. The let alone treatment is here again all that is necessary. The staphylococcus is more

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frequently found in combination with the streptococcus in producing a toxemia which is of a more severe type.

There were 180 cases which may be classed as sapremias. These all had foul lochia, and include those in which either no cultures were made owing to the mild degree of the infection or

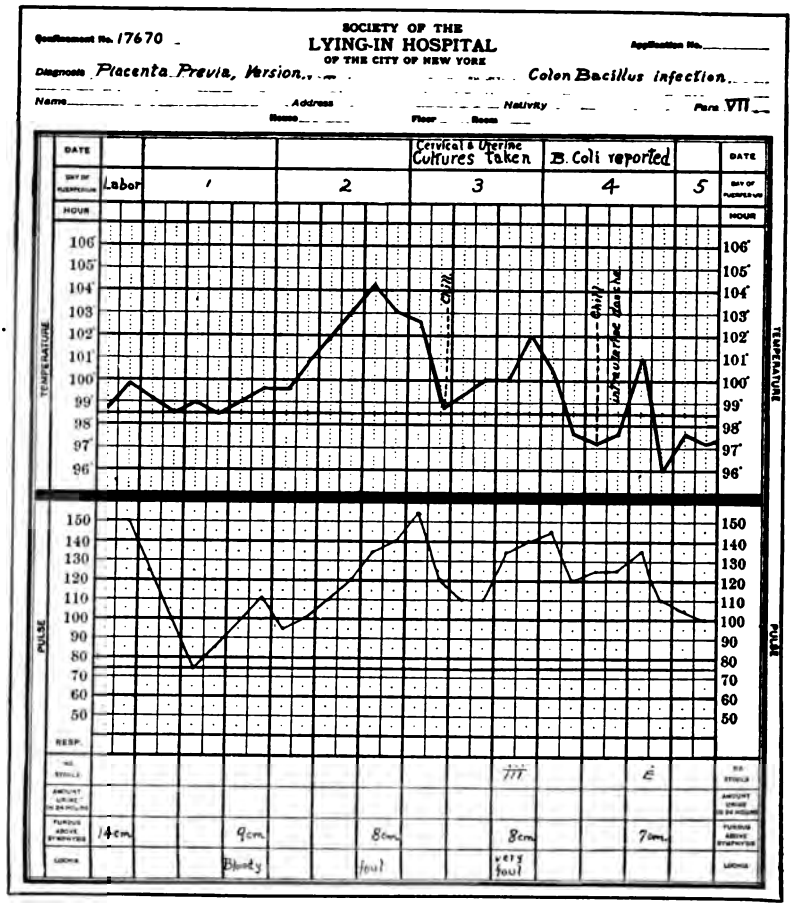

CHART V.—Showing the excellent results of the intrauterine douche in colon bacillus infection of the uterus.

where the culture was reported negative for pathogenic organisms. Many times there was evidence of retention of secundines, and improvement seemed more rapid in the cases in which a manual cleansing of the uterus was done. Aside from hemorrhage the indication for entering the uterus for the removal of foul retained lochia or secundines must be the patient's general condi-

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tion. Providing no organisms are found on smear or culture, if the temperature is high with or without chills, and the prostration is marked, it is proper to remove manually or with the intrauterine douche the contents of the uterus.

Such intrauterine manipulation will be precluded in the case of single day rises by the necessity of waiting for the twenty-four report from the bacteriological laboratory.

In making a diagnosis of pelvic exudate we will include two distinct pathological conditions. The first is strictly extraperitoneal and begins as a cellulitis between the layers of the broad ligaments.

It may extend anteriorly or posteriorly forming retroperitoneal infiltration. Pelvic cellulitis may thus become very massive without breaking down into pus formation. When extraperitoneal abscesses have formed either between the layers of the broad ligament or retroperitoneally, even sometimes within the sheath of the psoas muscle, we have usually opened them as soon as diagnosed. Fluctuation is rarely elicited, the pus being as a rule under considerable tension, and the diagnosis is made on the continued elevation of temperature and increasing pain and tenderness in the mass. The other form of pelvic exudate to be described is more likely to be found after abortion than term labor and is a true pelvic peritonitis. There is matting together of the pelvic organs together with loops of intestine and omentum with plastic lymph. When abscess occurs it is tubo-ovarian in character or in Douglas's culdesac, and though intraperitoneal is usually well walled off. Operation should be deferred unless the patient is growing worse or there is very distinct softened bulging in the posterior vaginal fornix.

Well marked pelvic exudate, many times filling up the entire pelvis, occurred fifty-seven times. Cultures and smears from the cervix, uterus or evacuated pus showed the following results:

No cultures secured in	13
Streptococci in	16
Staphylococci in	7
The above mixed in	9
Gonococci in	8
Colon bacilli in	4
Total	57

There seemed to be little difference in the course of resolution as far as the variety of the infecting organisms was concerned. It

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was noticeable that the streptococcus was most frequently found in the typical broad ligament extraperitoneal abscess, and that the pelvic complications of the gonorrheal infection were always tubal and intraperitoneal in location.

The colon bacillus was an especially treacherous organism when

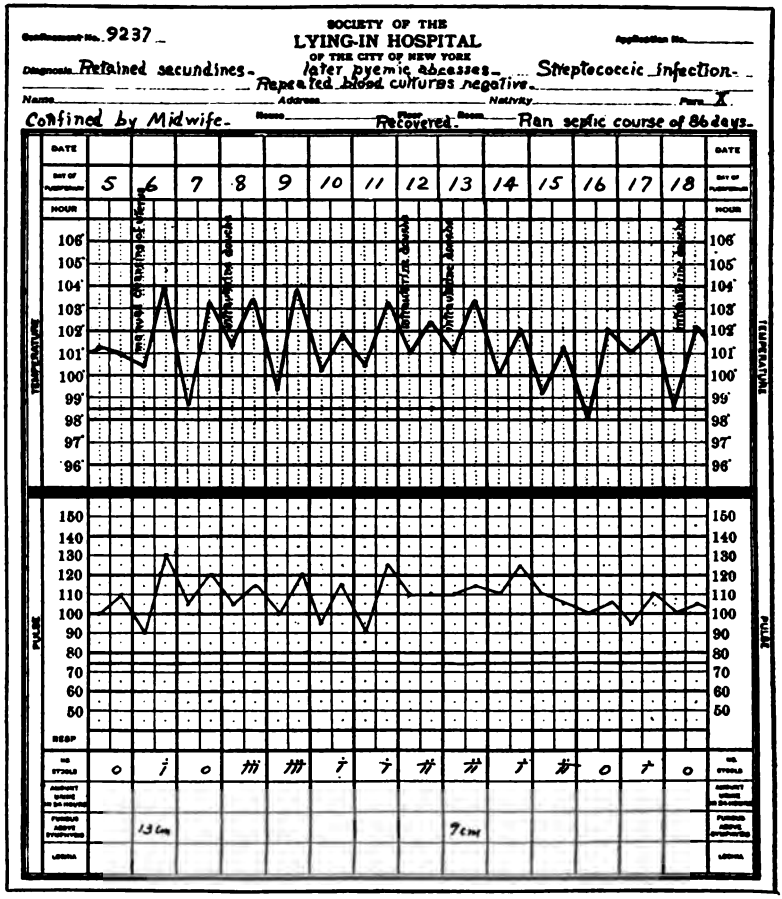

CHART VI.—Showing the uselessness of the intrauterine douche in a virulent streptococcus infection of the uterus, prolonging the course, and furthering the later pyemia by breaking down nature's barriers.

invading areas already infected with a different species of bacteria. Many of those late insidious types of retroperitoneal cellulitis are augmented and a fatal peritonitis superimposed by a penetration of this organism possibly through the adjacent intestinal walls. This was the course in two of the general peritonitis cases men-

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tioned below, where a previous posterior vaginal section into a pelvic mass revealed nothing but a cellulitis. Cultures made at the time of operation from the exuding serum showed streptococci. The later laparotomy for a general peritonitis disclosed the superimposed infection of the colon bacillus in the abdominal fluid.

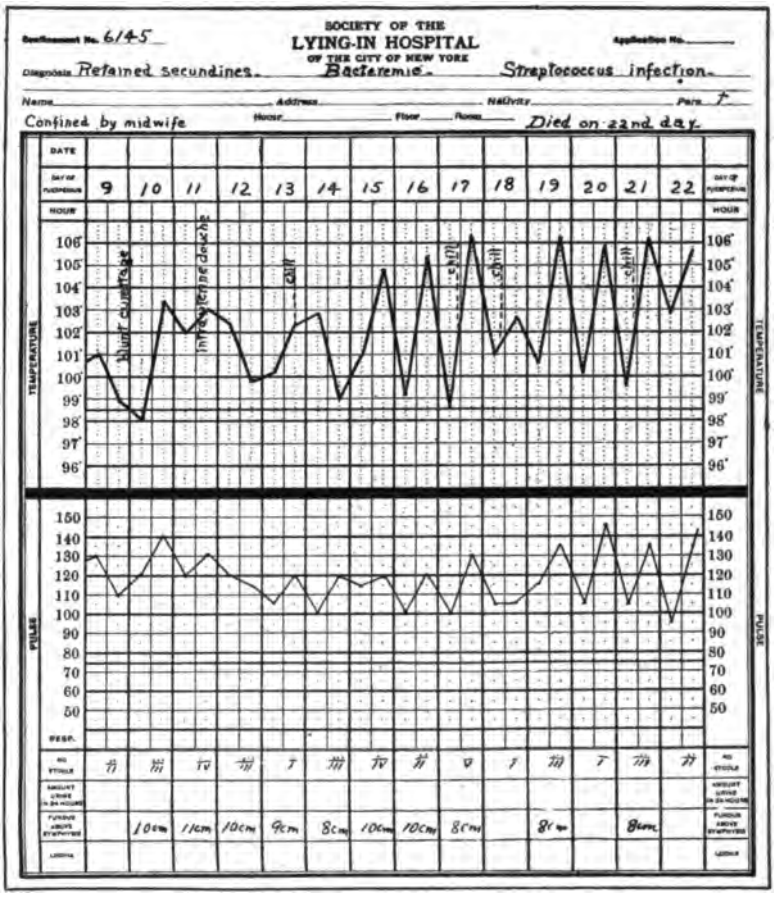

CHART VII.—Showing the bad results of the curettage and the intrauterine douche in streptococcus infection of the puerperal uterus.

Posterior vaginal section for the evacuation of pelvic pus formation was made twenty-one times. Exploratory laparotomy combined with posterior vaginal section or with incision over Poupart's ligament was done nine times. When the abscess is far out in the broad ligament its approch to the anterior abdominal

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wall can be outlined by an exploratory abdominal incision. The original wound can then be closed and a second incision made into the abscess far out above Poupart's ligament where it has been determined that such incision would enter directly into the abscess cavity without opening the peritoneum. When the broad ligament abscess is found close to the uterus, however, it must be drained transperitoneally the same as in a high tubo-ovarian abscess. In all cases of pelvic exudate where pus is found and liberated the convalescence is hastened, but it is doubtful if any advantage is secured by incising cellulitic masses when no pus is present. Resolution is the rule even in the extensive cases, and is hastened by daily hot vaginal douches, the ice-bag externally, and prolonged rest in bed preferably in the open air and sunshine. The Lying-in Hospital with its well equipped solarium on the roof is admirably fitted for this outdoor treatment.

Femoral and saphenous phlebitis occurred fifteen times, usually beginning seven to twelve days postpartum. In two instances it started as an antepartum complication. In ten it was the only lesion present.

Pelvic thrombophlebitis was diagnosticated clinically many times. These are all included in the pelvic cellulitis group, except two in which the diagnosis was confirmed by laparotomy. The treatment with rest, elevation, protection and the ice-bag for the relief of pain has been invariably successful. It is important to avoid massage for reduction of the swelling until the temperature is flat and the tenderness in the leg has entirely disappeared. We have seen further extension of the process and prolongation of the convalescence for several weeks by rough massage that was instituted too early.

The results in general puerperal peritonitis have been most unsatisfactory. There were nineteen cases diagnosed either by very definite physical signs, by operation or at autopsy. Cultures made from the peritoneal pus showed the following results:

Streptococci in	4
Staphylococci in	2
Above mixed in	2
Colon bacillus in	2
Colon b. and strepto. in	1
No growth or no cultures	8
Total	19

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Ten were subjected to laparotomy. In three a median incision was made with additional drainage incisions in the flanks, in five an abdominal incision combined with posterior vaginal section, and in two instances a hysterectomy was performed with general peritonitis following uterine rupture as the indication. Of the ten operated upon, nine died. The single recovery was a staphylococcus infection with many adhesions and pus pockets between the intestines. Eleven died in which no operation was made. Their condition on admission seemed too desperate to warrant the attempt

Bacteremia was a frequent finding in these peritonitis cases, so that it is evident that we will not be successful in opening the abdomen for drainage in general puerperal peritonitis until we are able to combat the associated infection in the blood.

The mortality among our straight cases of bacteremia until recently has been almost as great as in general peritonitis. Bacteremia with fifty or more colonies per cubic centimeter of blood was present in twenty-eight instances. Twenty of these women had been confined by private physicians and midwives and were sent into the hospital severely septic. Many were moribund on admission. The varieties of bacteria found were:

Streptococci in	22
Staphylococci in	1
Above mixed in	2
Colon bacillus in	2
Colon b. and strepto. in	1
Total	28

That bacteria in the blood are more frequently suspected clinically than they are demonstrated by our present culture methods has been pointed out by Dr. J. E. Welch, the hospital bacteriologist. In 175 septic women in which blood cultures were requested by the attending physician positive findings were made in but forty-six. In the twenty-eight cases listed above the streptococcus was found twenty-two times in pure culture, once associated with the colon bacillus and twice with the staphylococcus. The staphylococcus occurred once in pure culture and the colon bacillus twice. The colon bacillus was only identified from postmortem blood culture where the body had been kept over night on ice. It was found in the heart's blood and in the spinal fluid. Of the twenty-eight puerpera with bacteria free in the blood stream but three recovered. The first had an associated pyemia.

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When pyemic abscesses develop in the course of a bacteremia recoveries are frequently noted. In the list reported by Welch the only recoveries had abscess formation somewhere in addition to the bacteria in the blood. The two recent cases that have recovered are both of great interest to us, and the treatment employed in each will be the subject of further investigation. These were both cases of straight streptococcemia and without other demonstrable lesion. One already reported by Welch, responded to the subcutaneous injection of large doses of normal human blood serum after an evident failure with the leukocytic extract serum of His. The other was given two intravenous injections of thirty grains of magnesium sulphate in solution. Her temperature then fell to normal for four days when a slight phlebitis of the external saphenous occurred. This cleared up rapidly and she has passed on to a smooth convalescence. The injections were given very slowly. A chill followed each injection but there was no depression of the respiration which is the special danger warned against by Meltzer.

In conclusion I might outline the treatment that we now follow when the temperature rises after labor. Breast, lung and throat conditions are ruled out. We exclude pyelitis, malaria, and typhoid by appropriate tests. A cathartic is given and attention is paid to emptying the bladder. A full condition of either bladder or rectum interferes with proper contraction and drainage of the uterus. When there has been a recent perineorrhaphy the wound is inspected and stitches removed if there is much tenderness or edema. The abdomen is examined, noting height of the fundus, areas of tenderness or resistance and whether there is tympanities or rigidity present. If there is a high rise of the pulse rate accompanying the temperature, cultures are taken from the cervix and uterus whether the lochia is foul or not. At this procedure inspection can be made of the vagina and cervix, especially noting if the latter is distinctly patulous and gaping. Such a condition of the cervix points to retained portions of membrane or placenta. If the pulse rise is slight in comparison with the temperature rise no vaginal inspection or cultures are made. After this preliminary information has been obtained, the bed is elevated sharply at the head and an ice-bag applied to the lower abdomen. The position of the bed facilitates drainage and the ice-bag induces a better tone in the uterus, possibly somewhat inhibits bacterial growth, and certainly gives great relief to the patient if there is any pain. On the second day if the tempera

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ture is down our troubles are over and we have done no damage. If the temperature remains high or recurs we are justified in going ahead on the strength of the report from the bacteriologist which by this time will be available. Should the gonococcus or the streptococcus be reported the former treatment is simply continued

If the colon bacillus is found or "no growth" reported and the lochia is foul we give a gentle intrauterine douche. At this time with the continuance of temperature and in the absence of the gonococcus or streptococcus it is permissable to make a gentle digital exploration of the interior of the uterus and remove any fragments of secundines that are present or release possibly retained lochia. This is in no sense of the word a curettage. We never curette except in incomplete abortions at or before the third month. The further course of the treatment will depend on the development of the case and already has been suggested in the description of the various conditions that may arise in bacterial infection of puerperal women.

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A STUDY OF INFANT MORTALITY.

BY

I. J. HILL, M. D.,

New York City.

A DECADE or more ago, depopulation became a question of such interest in France that it began to be called the national problem. A campaign of investigation of the social questions concerned in insufficient procreation was followed by a wave of intense study in medical circles on the question of infant mortality.

During the past few years, America has become aroused by startling statistics on deaths in early infancy, and we are justified in saying that infant mortality is the question of the hour.

From the view-point of the obstetrician, the life of the infant and its safeguarding begins with the commencement of pregnancy. Loss of early life may be classified as:

1. Premature expulsion of the nonviable ovum. That is, abortion and miscarriage.
2. Intrauterine death of a viable fetus.
3. Death during labor of a full-term fetus or viable premature fetus.
4. Death in the days immediately following labor from influences acting during its intrauterine life or from the effect of in injury during the act of labor.
5. Death during the first year from other causes.

For the first class, premature delivery of a nonviable fetus, reliable statistics are difficult to obtain. The records of public maternity institutions give figures less than the actual occurrence. For uncomplicated miscarriage, many women do not seek the assistance of a maternity service, to which they would apply for attendance for delivery at term.

We inquired, however, into the histories of 680 women recently under our care as to the occurrence of premature expulsions in previous confinements. We found that in 2799 pregnancies there had been a loss of 7 per cent. from premature loss of the fetus.

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I am presenting statistics which were obtained from the service of a free maternaty clinic which I conduct. In these we shall speak of abortion, miscarriage, premature labor and still-birth as "unsuccessful pregnancy."

We made a study of the histories of a number of women each of whom had a baby under the care of our pediatric department, with a view to determine the relationship between the number of pregnancies and failure. As each woman had at least one successful pregnancy, our record of their unsuccessful pregnancies does not include any of primiparæ.

RATE OF UNSUCCESSFUL PREGNANCIES BY NUMBER OF PREGNANCIES (per 1,000).

Number of pregnancies of women.	Total number of pregnancies.	Number of miscarriages, etc.	Rate in total number of pregnancies.
2	252	12	48
3	333	17	51
4	453	37	86
5	380	46	121
6	366	33	90
7	287	33	115
8	264	35	132

We find a general tendency to more frequent miscarriage as the number of pregnancies increases.

We investigated the question of the bearing of the mother's age at the beginning of her child-bearing upon the success or failure of her pregnancies.

UNSUCCESSFUL PREGNANCIES IN RELATION TO MOTHER'S AGE AT FIRST CONFINEMENT.

At first confinement mother was	Number of pregnancies	Number of miscarriages, etc.	Rate of miscarriages, etc.
18 years or under.....	438	51	116
19 to 21 years.....	1,089	87	80
22 to 25 years.....	967	88	91
26 to 30 years.....	214	14	66

It is noticeable that the rate of miscarriage, etc., is less progressively with the maturity of the women at the first pregnancy up to the period of twenty-six to thirty years.

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As our patients comprise in addition to a number of Americans a large proportion of foreigners, we were able to make a comparison between the respective rates of unsuccessful pregnancy.

UNSUCCESSFUL PREGANCY WITH REFERENCE TO NATIVITY OF PARENTS.

	Number of pregnancies	Number of miscarriages, etc.	Rate of miscarriages, etc.
Both parents native Americans	339	50	148
Both parents foreign	1,623	106	65

This disparity in favor of the foreigners is of startling interest. It might at first glance suggest some racial disadvantage in the bringing forth of children. We made a further investigation with reference to the question of how far these women were advanced in the knowledge of matters of health and hygiene.

Our visitor saw each one of these women and after an interview in which these matters were brought out rated them as to their knowledge of hygiene, etc., on a scale of 100, 0–25 being the lowest classification.

The figures showing the rate of miscarriages, etc., follow:

UNSUCCESSFUL PREGNANCY IN RELATION TO GENERAL INTELLIGENCE AND KNOWLEDGE OF HYGIENE.

	Rating of Intelligence.			
	0–25	25–50	50–75	75–100
Number of cases	24	351	237	67
Number of pregnancies	94	1,458	927	256
Number of miscarriages, etc	7	109	37	46
Rate of miscarriages, etc	74	75	98	180

We find on analysis that as the standard of education in matters of hygiene increases, the number of unsuccessful pregnancies increases. We had other statistics which showed that these women who had superior intelligence also had better housing conditions, better food, etc. In fact, they were living under better conditions as to all the elements that promote normal full-term pregnancy. Even considering the possible existence of greater frequency of diseases predisposing to miscarriage, we

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are obliged to reason from such figures that these more sophisticated women had, in greater proportion, taken measures to avoid the responsibility of additional maternity.

We have considered the question of unsuccessful pregnancy so far chiefly in its social phases. We shall not here discuss the measures which might improve these conditions. Let us briefly review the various classes of failure from an obstetrical viewpoint and consider remedies. Abortion and miscarriage are caused chiefly by: displacements of the uterus, endometritis, toxemia, nephritis, endocarditis, anemia, debility and the infectious diseases. These conditions also operate to produce our second class—the death in utero of a viable fetus. Torsion of the cord, accidental hemorrhage, hydramnios and eclampsia are also frequent causes of death of the fetus.

Many of these factors would be beyond our control even if we were in charge of the cases from the beginning of pregnancy.

There is, however, a great deal that early observation and care would enable us to do. Specific medication, rest in bed for those in whom previous uterine diseases predispose to interruption, dietetics and the regulation of physical activities are measures within our command which would prove effective in many cases.

Still-birth may comprise the birth of a premature fetus of viable age which has expired in utero, and the delivery of a fetus, at term or before, so enfeebled from previous disease that it expires from the result of forces acting on it during an ordinary delivery.

There is a large class, however, of vigorous full-term children who die during labor directly as a result of it. In 4,300 cases of labor occurring in our clinic up to November of this year, there were 122 still-births or 3 per cent., but this included prematurity, syphilis and monstrosities. Schultze sets at 2 per cent. the number of vigorous, full-term children still born through the forces of labor.

The consideration of the reduction of mortality among this class is as broad as the whole subject of practical obstetrics which is directed to the safe delivery of mother and child. Among the causes of death of the fetus in labor are compression of the brain, cerebral hemorrhage and asphyxia. Avoiding these causes means wisdom and skill in the practice of obstetrics. It means judgment in deciding at what time to interfere; being masterfully inactive as long as the natural forces are progressive surely even

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if slowly to delivery without causing too much strain on the vitality of the child, being quick to act with due consideration for the mother's welfare when the prolonged but ineffectual efforts produce symptoms of failing strength of the child. It presupposes a scientific forethought that does not allow a situation to develop where futile attempts are being made at delivery by the natural ways of a child which is too large to pass without fatal injury through the pelvis. It means the wisest choice of the method of delivery, the skillful use of the method of choice.

We can lower the frequency of still-birth before labor by guiding the woman in the hygiene of pregnancy, by correction of malpositions and by choosing a feasible method of artificial delivery in cases of disproportion between fetus and pelvis.

During labor we must constantly watch the condition of the fetal heart-beat as the guide to the effects of a long or severe labor. We must consider the effect on the child of anesthetics. The attendant moreover must consider the child's life when brought face to face with his limitations in cases of complicated or difficult labor.

Midwives, if they are allowed to practise, must be made to call physicians in difficult cases before the child's chances are irreparably lost. The physician of limited experience must recognize obstetrical difficulties before the child is irretrievably lost.

Under the subject of still-birth is included cases of asphyxia or apparent death which proceed to real death directly or after temporary reanimation. There are many methods of treatment. An effective plan of procedure must comprehend the following principles:

1. The accoucheur should be prepared for this emergency and have in readiness, at the time of birth, the hot-water bath and other agents to be employed.

2. Satisfactory removal of matter from the respiratory tract should precede efforts at artificial respiration.

3. The operator should institute at once in a profound case, one of the most effective methods of resuscitation rather than beginning with relatively impotent measures and losing time in which the state of narcosis deepens so that even the powerful methods can no longer succeed.

4. He should continue his efforts until after the heart has failed to be heard.

5. The resuscitated child should be kept specially warm and watched for lapses of breathing and for collapse.

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Our subject includes infants dying in the first few hours, days or weeks after labor of two classes:

1. Those which rapidly decline or succumb to a slight exciting cause, because of conditions beginning in uterine life.

2. Those dying in the same way as the result of injury during the act of labor.

The causes producing death in the uterus may also produce weaklings. Therefore, the same hygiene, medical treatment and regulation which we suggested as a prophylactic against death in the uterus will be of value in preventing weakness at birth.

The same routine which guards against still-birth guards against weakness at birth from violence during labor.

For all the general classes of waste of early life which we have considered, from expulsion of the beginning fetus to loss of the child in the first weeks of life, there is an opportunity of some reduction by good care.

Whatever social questions may be raised in the matter, whether, in the case of the poor individual, charity or the state should supply means of providing good care during pregnancy, it is the physician who must directly bestow it. Every woman who is to become a mother should have the care of a qualified physician from the beginning of pregnancy. It should comprise:

1. Frequent physical examination, including laboratory examination with special reference to the discovery of evidences of syphilis, heart and kidney disease, toxemia, etc. Measurement of the pelvis and diagnosis of the position and probable size of the child.

2. Treatment of any abnormal conditions by medicine, diet, rest in bed, etc. Application of support for pendulous abdomen, correction of malpositions by external manipulation and support.

3. Careful inquiry into the conditions of living, the household canditions, air, light, food, exercise and amount of work done.

4. Correction of errors in hygiene. Securing of relief if necessary to provide proper food, clothing and abstinence from arduous labor during last three months of pregnancy. Regulation of the food taken and prohibition of the use of alcohol.

5. Education of the woman as to the necessity for her to nurse her child when born and preliminary care of the breasts to secure good conditions for breast-feeding.

6. The selection of a suitable place for confinement and if at

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the home of the patient, the providing of all the materials that will be necessary for scientific obstetrical care.

7. Immediate response to a labor call by attendant. Attendance continuous enough to furnish treatment for complications. Summoning specially trained obstetricians for any condition that might go beyond the resources of the attendant as soon as they are recognized.

8. The after-care by a trained nurse of weakling infants or those subjected to unusual violence during labor.

The fifth division of our classification of early loss of life, "Death during the first year from other causes," belongs to pediatrics rather than obstetrics. There is a duty, however, that belongs to us as physicians and men, to do what is at our door in the saving life, and the obstetrician particularly in institutional work is in a position to reach a great field either directly or through pediatricians by cooperating with them.

For ten years I have been conducting a free maternity clinic which furnishes care at the homes of the patients. Though early in the development of this clinic, we made efforts to look after the welfare of the infants after labor; for nearly eight years we followed the usual routine of obstetrical institutions, procuring our results in infant salvage chiefly by trying to provide good obstetrical care during the labor and puerperium. We gave the mothers advice as to their personal hygiene at the time of the antepartum examination and we encouraged them to consult us during the early months of the infant's life whenever they saw fit.

In the fall of 1908 my attention was called to an investigation made by the Association for the Improvement of the Condition of the Poor, showing that among the twenty-six maternity institutions in the city practically nothing more than furnishing good obstetrical care was being done to lower the mortality among the infants delivered in the services. That is to say, after the women were discharged at about two weeks the baby was also lost from view.

An enormous infant mortality was shown to exist among the classes that charity obstetrical services were reaching for maternity work.

It has always been the cry of the various pediatric clinics and milk depots that they do not have the babies from birth. Infants are brought to them for supervision of feeding after some

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months of irrational care has prejudiced the prospects of successful rearing.

We resolved to meet this issue in as far as the infants born in our service were concerned. We established a pediatric service and department of prenatal work. From that time we took actual care of the pregnant women as soon as they came to us and undertook to supervise their hygiene so as to bring them to the time of labor in good condition to have healthy offspring. In addition to a work of social relief, securing better living conditions, etc., and the abandonment of ill-advised physical activities, we inculcated these women with the idea that they must nurse their expected babies. We gave special attention to the breasts and nipples.

The pediatric department which was organized by Dr. Herman Schwarz undertook in addition to a certain part of the prenatal work the care of the new-born babe from birth throughout the entire first year of life.

I shall not go into a detailed description of this work. Four pediatric clinics a week are held for examination and supervision of the babies. During the hot months all day on every day doctors and nurses were on hand to advise in cases of intestinal trouble.

Visiting nurses go to the homes of the patients to see babies too young or too sick to be brought to the clinic and to keep in touch with mothers who neglect to bring the babies to the clinic. A social visitor makes visits to investigate cases of destitution, bad hygiene, etc., and arrange for relief.

Milk is furnished to certain cases of bottle-feeding; but the greatest effort of the clinic is in the matter of establishing breast-feeding. It is so apparent from statistics that an enormous proportion of the great summer loss of infants is among the bottle-fed that a ratio of life-saving can almost be assumed as the ratio of increase in substituting of breast- for bottle-feeding.

The following table shows some of the gains of the clinic in this respect:

Of forty women who nursed the previous child o months:
Ten of them under clinic supervision nursed 8 months.
Nine of them under clinic supervision nursed 6 months.
Five of them under clinic supervision nursed five months.
Four of them under clinic supervision nursed four months.
Nine of them under clinic supervision nursed three months.

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Four of them under clinic supervision nursed two months.
Three of them under clinic supervision nursed one month.

Of twenty-four women who nursed the previous child one month:
Two of them under clinic supervision nursed eight months.
Three of them under clinic supervision nursed seven months.
Four of them under clinic supervision nursed six months.
Five of them under clinic supervision nursed five months.
Three of them under clinic supervision nursed four months.
Two of them under clinic supervision nursed three months.
Four of them under clinic supervision nursed two months.

Of twenty-six women who nursed a previous child two months:
Three under clinic supervision nursed nine months.
Two under clinic supervision nursed eight months.
Eight under clinic supervision nursed seven months.
Four under clinic supervision nursed six months.
Three under clinic supervision nursed five months.
Three under clinic supervision nursed four months.
Three under clinic supervision nursed three months.

Of forty-one women who nursed a previous child three months:
Two under clinic supervision nursed nine months.
Two under clinic supervision nurse eight months.
Nine under clinic supervision nursed seven months.
Seven under clinic supervision nursed six-months.
Four under clinic supervision nursed five months.
Seven under clinic supervision nursed four months.
Nine under clinic supervision nursed three months.

Out of twenty-two women who nursed a previous child four months:
Four under clinic supervision nursed eight months.
Seven under clinic supervision nursed seven months.
Two under clinic supervision nursed six months.
Three under clinic supervision nursed five months.
Five under clinic supervision nursed four months.
One under clinic supervision nursed three months.

This work was right at hand for the pediatric department of our obstetrical clinic, for as the babies were born, and indeed before they were born, it secured control of them. Other infant dispensaries not so attached could not obtain such early control.

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On the other hand, the pediatric department is giving the obstetrical service an earlier control of its cases. The women who have young babies in the care of the pediatric department come to the clinic at least at monthly intervals for a year in order to have their babies examined. When they come with their babies, they are closely questioned as to the existence of a new pregnancy. If they are pregnant, they are immediately enrolled in the obstetrical department. In this way we obtain control of a constantly increasing number of cases from the beginning of pregnancy. We are then able to put to the test the value of a system of supervision of pregnancy, with a view to preventing premature death of the fetus, etc. There is no doubt that we have already accomplished a good deal in preventing this loss as well as in preventing still-birth. It is a little too early in the history of this work to tabulate the results.

I am fully convinced that there is a great field for work in puericulture, prenatal and postnatal, which the maternity clinics can and should undertake.

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SIMULTANEOUS OCCURRENCE OF ADENOCARCINOMA AND SARCOMA IN THE SAME UTERUS.

BY
ARTHUR THOMS JONES, M. D.,
Providence, R. I.

(With seven illustrations.)

THE comparative infrequency with which we find these two conditions associated in the same uterus warrants a report of the following case which illustrates the condition very typically and may aid in determining some of the important factors in the condition.

REPORT OF CASE.

May 13, 1910. A. B., age 56, white. Single.

Family History.—Father died of Bright's disease. Mother died of rheumatic fever at the menopause.

Previous History.—Menstruation regular, every four weeks lasting three days, amount moderate. Menopause three years ago. Since then saw slight flow one day only.

Present Illness.—In February, 1910, began to flow profusely for one day, then kept up a little for a week or so. Since then has had slight flow especially when arising at night to urinate one or two ounces of blood would gush out. Has some dull aching pain in back and through pelvis. Frequent urination, appetite good, and has not lost weight appreciably.

Physical Examination.—Patient fairly well nourished, weight 135 pounds. Looks rather anemic and sallow. Vagina rather small caliber, but long. Cervix large and rather hard, bloody discharge coming from os. Uterus large, fundus forward. Posteriorly can be felt a hard mass evidently a myoma. Uterus with mass seems four or five times normal size.

Diagnosis.—Myoma with malignancy.

Operation.—May 18, 1910. Abdominal section. Complete hysterectomy. A sound passed into the uterus 3 inches. Cervix dilated and curettage brought away a large amount of

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sloughing material of which there seemed a limitless quantity. Hemorrhage very active so curettage not continued, but uterine cavity was immediately packed with gauze. Abdomen then opened by a 5-inch incision and complete hysterectomy done, cutting vagina across below the cervix. There were soft adhesions about both appendages which were swollen and the fimbriated ends of both tubes occluded.

After removing the uterus with its appendages the vault of the vagina was closed with chromic gut sutures, the cut ends of the round ligaments were sewed to the vagina and the peritoneum closed over all with catgut. No enlarged lymph nodes could be palpated. Appendix small and bound down by a band of adhesions. It was removed, stump cauterized and invaginated with purse-string suture. Incision closed in layers with catgut. Skin with horse-hair suture.

Subsequent History.—Good recovery and showed very little evidence of shock from the operation. Ran an afternoon temperature of 101° on seventh and eighth days and on ninth day dressing was done. There was a large amount of sanguinopurulent fluid in the abdominal wound which with daily dressings cleared up very promptly. During the first week in bed there was also a vaginal discharge of the same character which also cleared up promptly.

June 8. Patient up and about.

June 12. Discharged and returned to her home fifteen miles distant.

July 15. Examination at office shows abdominal wound clean and good scar. Vaginal vault perfectly healed, no discharge, no thickening or infiltration in the pelvis about the vaginal vault. Free from pain and urinary symptoms, gaining in weight, color much better and whole general appearance much improved.

Specimen.—Incision of posterior wall of uterus from fundus to cervix shows a myomatous appearing mass, sloughing and broken down. This mass occluded the cervical canal so that the cavity of the uterus contained about 1 1/2 ounces of foul, grumous fluid. Gross appearance of whole uterine mucosa one of advanced malignancy.

Following is the full pathological report by Dr. Harold G. Palmer.

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Providence, R. I., June 1, 1910

Report of Examination of Specimen from Uterus. Received May 19, 1910. Clinical Diagnosis, Fibroma. Malignancy.

Pathological Diagnosis: Adenocarcinoma of cervix and of body; myoma with sarcomatus degeneration.

THE specimen is a uterus with appendages complete. An incision has been made in the median line of the posterior surface from cervix to fundus. The peritoneal surface is smooth and presents nothing remarkable. Anteriorly, the organ measures 9.5 cm. in length, 6 cm. between cornua. The uterine canal measures 8.5 cm. The posterior wall below the fundus varies in thickness from 22 to 30 mm. of which fully one-third is occupied by thickened and altered mucosa. The lower uterine segment is attenuated and the line of the internal os is obliterated. The wall at the external os is 6 mm. in thickness and is rather

FIG. 1.—Adenocarcinoma of cervix and body; myoma with sarcomatous degeneration.

soft and spongy. Beginning at a point 15 mm. or less within the external os, and hanging down like an apron to the os, there is a deeply injected, spongy mass of tissue which extends upward for 30 mm. at a fairly uniform thickness of 7 mm. Springing from the posterior wall and laterally near the fundus and projecting into the canal there are considerable bosselated masses of tissue the surface of which is yellowish-gray, smooth, and soft, almost gelatinous. This tissue and that already described of the cervix terminate quite abruptly at the upper and lower margins of an extensive tumor mass which involves the lower two-thirds

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of the body. This tumor, pyriform in shape with stem toward the fundus, springs from the posterior wall, all of which, expect 8 mm. at the surface, is included in the growth. It extends forward involving the anterior wall, occluding the uterine canal at a point 30 mm. from the fundus. The cut surface varies in appearance and texture. The lower, central portion is necrotic and sloughing and much of the substance has been removed with the curette. The intact portion is smooth throughout and soft, centrally yellowish-red to pale yellow shading gradually to the outer border where it is almost white and the tissue firmer and

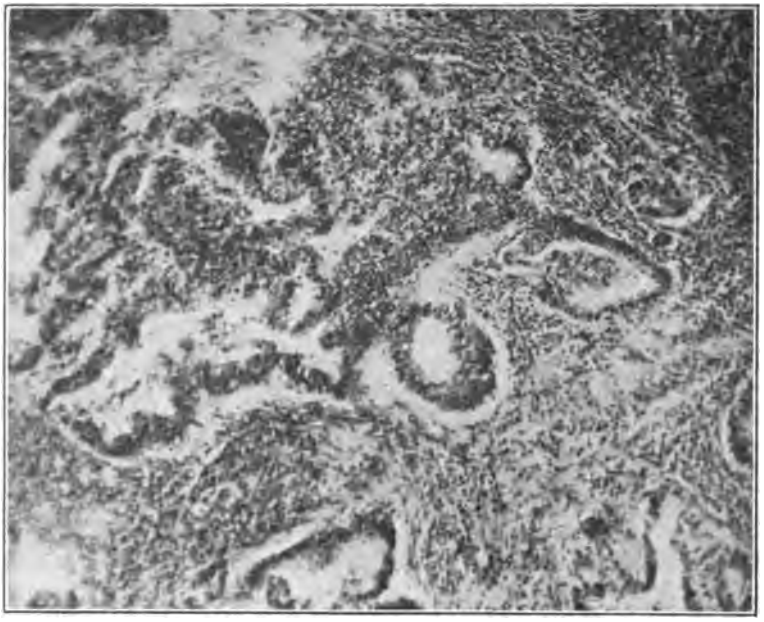

FIG. 2.—Posterior lip of cervix. Section taken at A (Fig. 1), × 100. General structure and arrangement of neoplasm. The stroma is more abundant in this field than in the balance of the section.

of fibrous consistency. The ovaries and tubes are not remarkable. Tissue taken for section from twelve different areas, balance of specimen preserved in Kaiserling.

MICROSCOPIC EXAMINATION.

Cervix.—The surface is quite destitute of superficial epithelium. A scanty connective-tissue stroma is honeycombed with large, tortuous glands that involve nearly the entire substance

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of the wall. The glands are lined with cylindrical epithelium of medium height that are usually present in reduplicated layers. Papillary processes consisting of large masses of epithelium clustered about a delicate central stalk projecting into the lumen are of common occurrence. Many of the acini present scattered epithelial cells of unusual size, the nuclei of which are large and have an irregular, deeply staining chromatin network, the cyto-

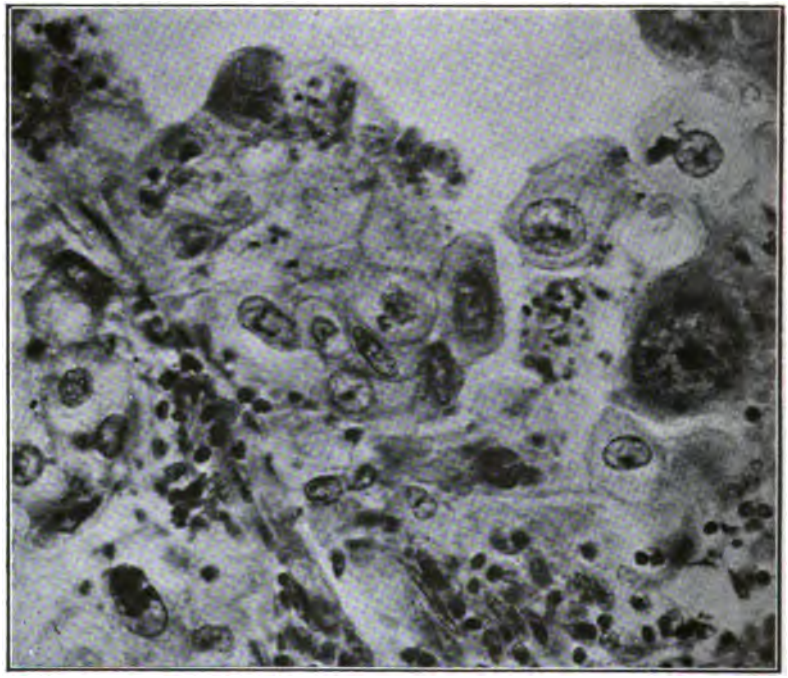

FIG. 3.—Same section as figure 2 but × 450, to show structure of large atypical cells.

plasm generous and clear. In a longitudinal section from the left side the process does not extend so deep and the bordering muscular tissue shows an extensive round-cell infiltration in the vicinity of the lymph spaces, which in turn appear choked with wandering lymphoid cells of large size.

Body, Left Horn.—The process here, with slight and unimportant variations, is a reproduction of that present in the cervix. The neoplasm does not immediately invade the myometrium to any great extent, but in the lymph spaces deep in the muscle there are considerable groups of transplanted cells. A com-

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parative study of the epithelium of the neoplasm simultaneously present in the body and the cervix develops the interesting fact that the cells, cylindrical in type in both instances, are taller in the former than in the latter location. By actual measurement of individual cells, those of the body average 3 microns higher. The cells in common have large round or oval vesicular nuclei and a generous cytoplasm. In both locations large cells

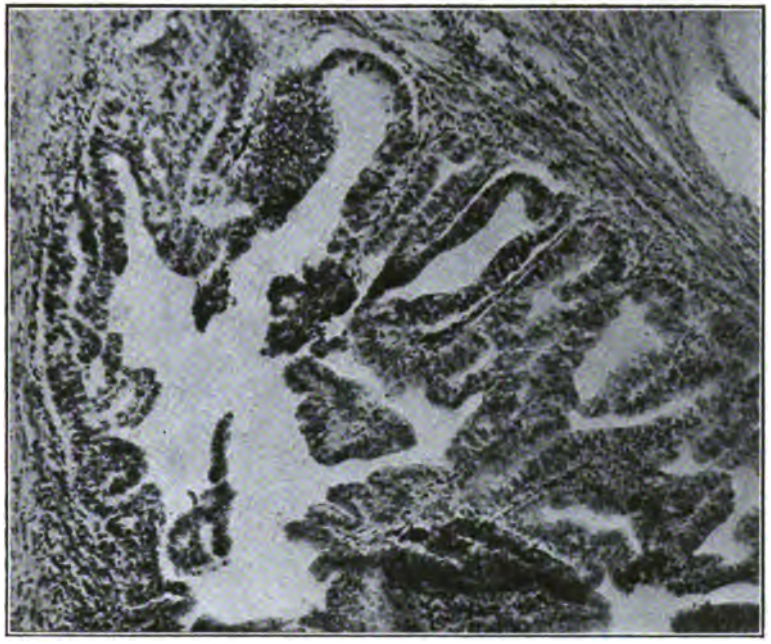

FIG. 4.—Section taken at C (Fig. 1), × 100. Showing general structure.

with irregular nuclei rich in chromatin are found indefinitely here and there in the acini. (Figs. 3 and 5.)

Body, Right Horn.—The mucosa is sharply defined from the underlying muscle which is free from epithelial invasion and round-cell infiltration. There is no surface epithelium but the stroma supports capillary sinuses that are crowded with red cells and leukocytes, forming an inflammatory surface zone. A fairly abundant, cellular stroma supports many hyperplastic glands that are in transition from normal to malignant type. These are generally round, variable in size, often dilated, and in a few instances irregularly winding and tortuous.

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The epithelium is low cylindrical with uniform-sized round vesicular nuclei. It is usually present in a single layer, but in many areas it is markedly reduplicated and irregular in size and distribution.

The Tumor.—A study of sections taken from six different areas shows a neoplasm which, although partially covered by the lesions of the cervix and body, is distinct from them. Two types of tissue are present—namely, unstriped muscle and young,

FIG. 5.—Same as figure 4 but × 300. Showing structure and arrangement of epithelium in part of a labyrinthine gland. At the top are very large cells resembling those shown in figure 3.

undifferentiated connective-tissue cells, the latter comprising the major portion of the tumor. (Fig. 6.) The picture presented is of solid masses of closely packed cells that have large nuclei with a generous chromatin network and a scanty cytoplasm that is often so indefinite that the appearance given is of almost solid aggregations of nuclei. There is a minimum of stroma, that present consisting of a few delicate, wavy lines, penciling its way between small groups of cells. The blood supply is ample. Well developed vessels are present in the

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myomatous tissue bordering on the growth, but in the substance of the neoplasm endothelial channels are either imperfect or entirely wanting, the blood then being distributed through spaces between the tumor cells. At the lower and inner border the tissue is infiltrated with leukocytes, sloughing and necrotic. Higher up near the point of occlusion of the uterine canal the inner border is covered with a layer of atypical, proliferating glands extending in continuity from the glands of the fundus

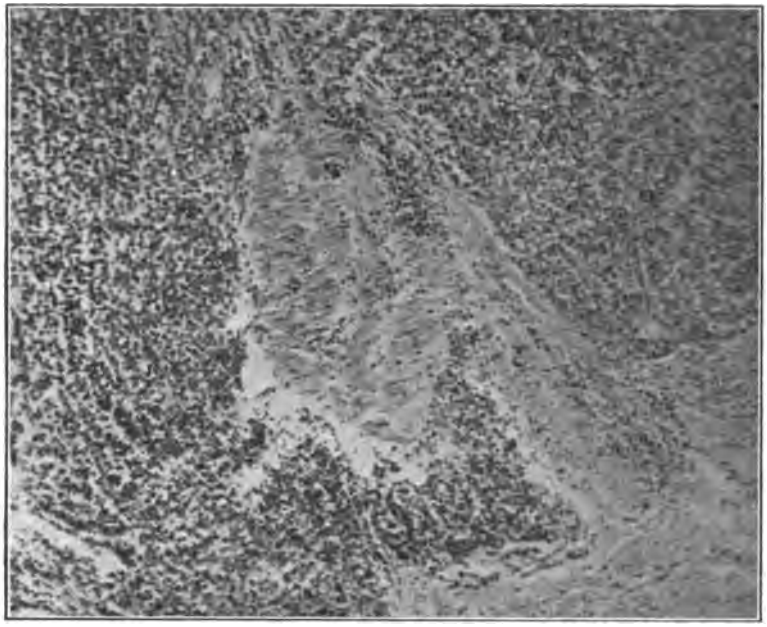

FIG. 6.—Section taken at B (Fig. 1), × 100. Showing general structure. A finger-like process of remaining myomatous tissue is shown.

already described. The neoplasms at this point are distinct, a narrow band of dense connective tissue separating the two. The morphology of the two types of cells presented in the same field is admirably shown. The epithelial cells have nuclei that are larger and stain less intensely, and their cytoplasm is much more abundant. From sections near the outer border of the tumor the probable genesis can be traced, the process giving the appearance of metaplasia of myomatous into sarcomatous tissue.

To HAROLD GUSTAVUS PALMER.

ARTHUR T. JONES.

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Statistics.—There are practically no statistics on the frequency of this condition. Text-books give very little or nothing regarding it. Bovee's book mentions cases as having been reported by Klein, Niebergall, Emanuel, Iwanoff, Montgomery, Opitz, Nebesky, and Fry but states that the condition is very rare. Late publications on myoma and sarcoma, on myoma and carcinoma, do not speak of the occurrence of sarcoma and carcinoma in any of the cases although it may be presumed that the condition must have ben found in some of the cases. Consider-

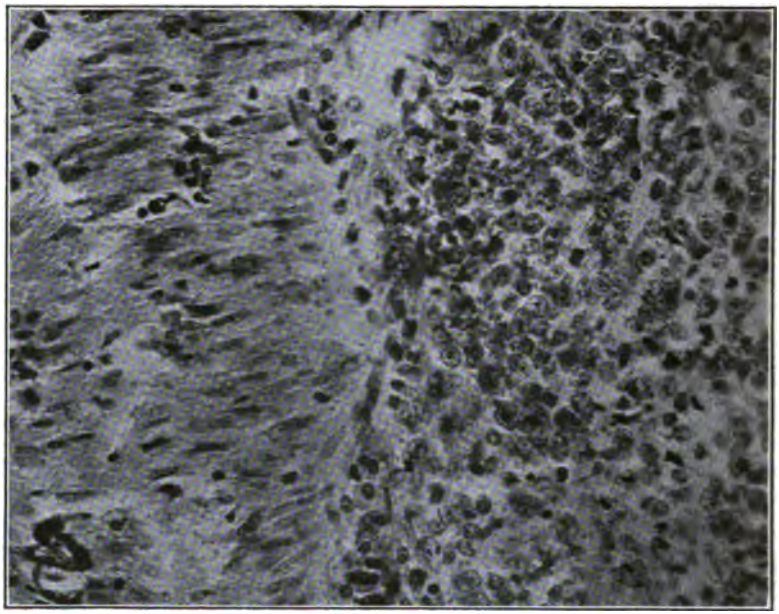

FIG. 7.—Same as figure 6 but × 300. Showing structure of two types of cells present.

ing the frequency with which we find the association of myoma and carcinoma and of myoma and sarcoma, this latter being generally looked upon as a complication of myoma of the uterus, it would seem that the occurrence of carcinoma and sarcoma in the same uterus must be of greater frequency then we might judge from any writings on the subject.

Tracy's report of 3561 cases of myoma gives 1147 "degeneration and changes in the tumors and uterus." Carcinoma of corpus uteri 63 or 1.7 per cent. Carcinoma of cervix 25 or 1.5 per cent. He speaks of "two or more degenerations in the

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same tumor," but does not specify the types of the degenerations. Noble gives a percentage of 2.8 per cent. of carcinoma in a series of 4880 cases of myoma. Cullen says that sarcoma occurs in 2 per cent. Winter in 1743 cases found sarcoma occurring in 4.3 per cent. In the submucous variety it was present in 9 per cent. of Auch's cases. McDonald in a series of 700 cases of myoma gives seven sarcomatous degeneration and twenty-six adenocarcinoma. Martin, of Greifswald, in 205 myomata found sarcomatous degeneration six times. Hauber in Klein's clinic in 138 myoma found sarcoma three times. Although we have plenty of statistics on the presence of carcinoma and myoma and sarcoma and myoma we get practically nothing on the simultaneous occurrence of the two conditions.

Symptoms.—The symptoms are those of carcinoma of the uterus, plus the presence of a watery discharge at times colored with blood and of an offensive odor, shreds and pieces of sarcomatous tissue which macroscopically may be taken for a sloughing and breaking-down fibroid. The uterus is enlarged, soft, and boggy, and irregular in outline from the presence of the sarcomatons mass. If the cervix be not involved in a cancerous mass it may show nothing more than a very patulous os. There may be practically no perimetritis if the disease has not progressed far enough to involve and break down the serous coat of the uterus, the only evidence of extension being in the appendages which may be swollen with enough adhesions about them to simulate very much a case of chronic salpingitis. Or we may have extension of the carcinomatous process and already the involvement of the lymph nodes and pelvic glands. In the later stages we may have extension of both carcinoma and sarcoma with marked perimetritis, the pelvis may be blocked with a hard inflammatory mass and there may be evidences of metastases in other organs. The soft boggy condition of the uterus and the swollen tubes is due to the hematometra or pyometra caused by the sarcomatous mass obstructing the uterine canal and damming back the secretions in the uterine cavity.

Diagnosis.—Diagnosis may be made only upon microscopical findings, although the addition of an at times watery, foul smelling discharge with sloughing-looking material and the presence of a tumor-like mass, having the feeling of a fibroid growth in addition to a soft, enlarged uterus, may arouse our suspicions as to the true pathological condition.

Operation.—The indications for operation are apparent usually

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when the patient consults the surgeon, for it is not until she has hemorrhages and discharge, is anemic or cachectic with loss of weight, or is suffering from pressure symptoms from the myoma, that she seeks relief. The importance of microscopical examination of every suspected carcinomatous uterus, and of every case of fibroid uterus removed can not be over emphasized for it is only by the microscope that we are enabled to say whether a coexisting myoma is taking on a sarcomatoous change or that we can differentiate between a sarcomatous change of a myoma and a primary sarcoma of the uterine wall. Undoubtedly many cases of sarcoma associated with carcinoma have been overlooked upon the presumption that the sarcomatous mass was only a sloughing fibroid. More careful pathological work would bring to light many such cases and add materially to our knowledge of what is considered a rather rare condition.

It would help us on our data regarding the percentage of myomata that undergo degeneration and have a bearing upon the much discussed question "should the presence of myoma be sufficient indication for operation or should we wait for for symptoms?" At present the consensus of opinion seems to be that we should wait for symptoms before operating, especially if the tumor is of small size and the woman in the child-bearing period of life. From the mere presence of a myoma we should not presume that it will become malignant, but in any case if we are beginning to get symptoms or if from microscopical examination of curettings we find malignancy, or if in spite of repeated curettings the watery discharge continues, complete hysterectomy will be the only treatment.

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THE PATHOLOGICAL ERA VERSUS THE PHYSIOLOGICAL IN THE SURGICAL TREATMENT OF INTRA-ABDOMINAL INFECTIONS.

FROM THE CLINIC OF DR. JOSEPH PRICE.

BY

J. W. KENNEDY, M. D.,

Philadelphia, Pa.

(With Six Illustrations)

To review the history of intraabdominal infections from the dawn of the anti-and aseptic eras to the present day would be a recital of a gradual and progressive onslaught upon intra-abdominal lesions. Precept upon precept, the veteran operators advanced the operative procedures from a mere incision for a bursting abdomen distended with pus to the most complete and finished toilets of the present hour, made possible by a knowledge of asepsis. Within the last year a great revolution has dominated the American profession and the physiological era in surgery is born. With the advent of this era in the treatment of peritonitis, we are practically asked to step back twenty-five years. We are taught, the courage gained and earned through our knowledge of bacteriology has made us too bold in dealing with infectious lesions of the abdomen. How reluctantly should we take the first step in regression of progress! The adoption of the physiological era of surgery, as practised and understood by the great majority of our profession, is the most lamentable step of a progressing profession.

Our present knowledge of asepsis has permitted us to study living pathology. It has not only permitted us to do radical surgery, but grants us the privilege of early investigation and should give any competent surgeon practically a *nil* mortality. If the physiological era takes from us a single privilege or means of early recognition of intraabdominal infections, or in any way cramps our surgical limitations, I view the era with profound apprehension and regret. I make this statement with no little feeling, as I already see that the physiological era will give us later and more complicated surgery and timid surgeons to do the complicated work; an incompatibility of surgical affairs we should not be called upon to witness. If the regression in

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progress in the next ten years is as rapid as it has been in the last year, at the expiration of a decade we will again be simply lancing the abdominal walls for intraabdominal infections, just where we began at the advent of asepsis.

Less than twenty years ago, in a discussion of three papers on appendicitis read by Dr. Joseph Price, W. W. Keen and the late T. S. K. Morton, the late Wm. Pepper, one of the most advanced teachers of internal medicine of his time said, "I believe if every case of appendicitis was operated upon the mortality would be increased ten fold." How merciful has been

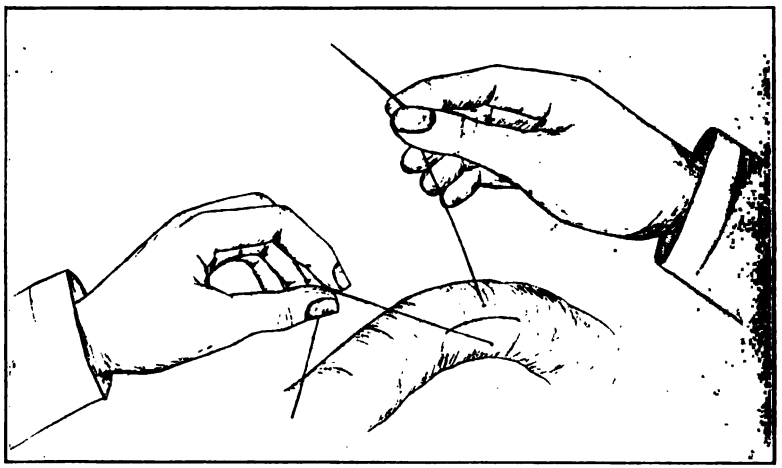

FIG. 1.—Tail of suture held in the left hand, beneath the right hand.

the revolution! In less than twenty years the words of this distinguished teacher have been blotted out by modern surgery. There is probably not a noted operator in America who could not enumerate 1000 operations for appendicitis without a death.

In the last ten years I have not seen a death from the removal of an appendix. So we have a very just pride in our surgical dealings with infectious lesions. The surgery of the past twenty-five years may be defined as the pathological era, in that we have been making strenuous efforts to deal boldly with pathological lesions and their complications—namely, adhesions, obstructions, perforations, etc.; or, in other words, we have been seeking the distal infecting source and applying its surgical remedy.

The physiological era deals less radically with infections,

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its surgery being modified as to time and extent of execution, depending upon nature of infection and stage of infectious involvement. Is it founded upon a substantial basis? The element of doubt as to extent of inflammatory involvement at any given time should prevent an attempt at any such distinction. However, the physiological era in surgery asks us to be less radical in our execution and manipulation, in order to prevent peritoneal absorption of toxins and bacteria. A superficial view of this advice might appeal to one if we had but the one

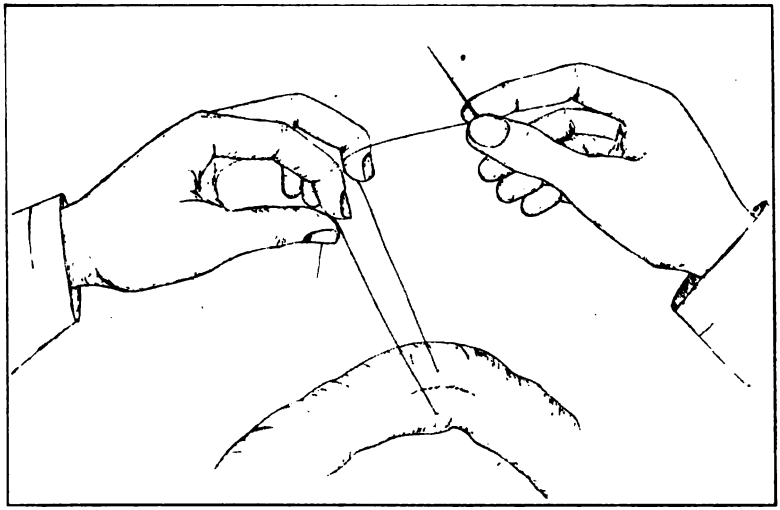

FIG. 2.—Making traction, with middle finger of left hand, of needle end of the suture.

enemy to combat—namely, peritoneal absorption; but when you attempt to minimize peritoneal absorption through less radical surgery you have been flanked by intestinal obstruction, distal abscess, and that ever fatal perforation that remains unclosed through surgical timidity, born from fear of peritoneal absorption.

No operator, living or dead, has had a greater experience with intraabdominal pus than Joseph Price, and it can be truthfully said that no operator has been so consistent in his radical toilets with intraabdominal infectious lesions. An intimate association and a many years' apprenticeship under this great master makes me a most ardent advocate of first-hour work with radical toilets. It appeals to me as a completed work.

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I am in a position to say that any operator who fails to remove a gangrenous or suppurative organ or fails to close a perforated lesion lest he increase peritoneal absorption advances a theory which is untenable; it has not sufficient surgical dignity to permit of discussion. I believe the peritoneum welcomes the surgically clean finger as it is insinuated between the matted viscera over the infected roads which lead toward the distal infecting source. Each adhesion broken, each obstruction relieved, is an important step in surgical drainage and it must be clearly evident to the thinking mind that drainage is the most potent factor in prevention of peritoneal absorption. It has gotten to this condition of affairs, "you will be damned if you do and damned if you don't." One operator is afraid to seek the distal infecting source lest he increases peritoneal absorption and the other seeks the source of infection to prevent subsequent infections, complications, and absorption. In all infectious lesions of the abdomen we must have a broader view than the mere involvement of a vast plain of endothelial membrane, parietal and viscreal.

In a general peritonitis, were it not for the absorption of toxins and bacteria from the mucous coat of an obstructed or partially obstructed bowel, this grave lesion would often be robbed of its fatal termination. You can no more afford to ignore the complications of a peritonitis, obstructions, adhesions, etc., which are resultant and coexistant, than you have a right to turn your back upon a strangulated bowel when existing as a lesion *per se*. The presence of a peritonitis should not so entertain you surgically, as to make you unmindful of lesions produced and existing as fatal complications.

Operators do not seem to be familiar with the fact that adhesions and obstructions take place very early in peritonitis. Some interesting experiments have been made to show that adhesions forming in a few hours can cause a bowel obstruction. I have seen a number of instances of total bowel obstruction from an adhesion of no more strength than wet blotting paper. The physiological era of surgery has for its foundation prevention of peritoneal absorption. For a number of good reasons I am not of the opinion that much absorption takes place after the general peritoneum is involved.

Mr. Moynihan, in his charming book on living pathology, calls attention to some interesting experiments by Erhardt on the bile ducts. When the ducts were incised and the bile allowed

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to flow into the normal peritoneal cavity the animal died from a vicious toxemia without any signs of peritonitis; but in those experiments where a culture of colon bacillus was added with a resultant plastic peritonitis the bile was absorbed much more slowly and the animals lived many days. It is our rule in Dr. Price's hospital, in those pitiably neglected patients with a general peritonitis with distention, after a completed toilet to put the patients in bed with the foot well elevated.

Now, experiments reveal that the normal peritoneum of the upper abdomen is most rich in power of absorption of toxins and,

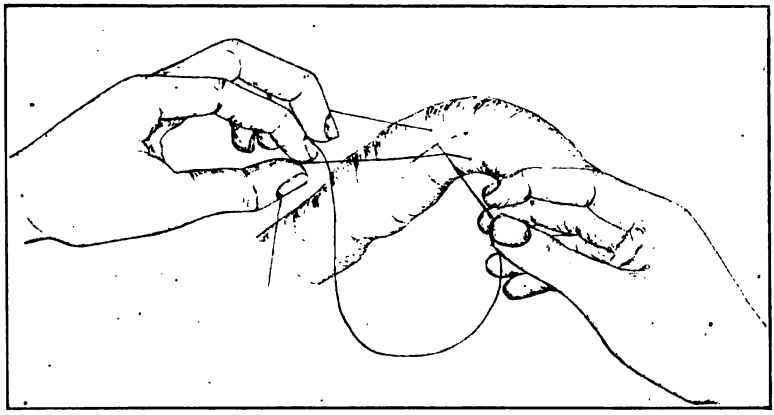

FIG. 3.—Temporarily fixing the suture, by pressure between the middle and index finger.

therefore, the Fowler position is one of the important factors of the physiological era in the treatment of peritonitis. If it is not true that peritoneal absorption is greatly retarded by the inflammatory lesion, how can we with prudence and success place our patients in the reversed Fowler position? We feel that even the peritonitic peritoneum is more our friend than enemy, and for this reason we firmly insist that all lacerations and abrasions of the peritoneum should be immediately closed with fine silk.

From a number of requests I have by a series of drawings, diagrammatically illustrated, Dr. Price's method of using the small cambric needle with oo silk to repair these abrasions. By keeping the needle constantly in the hand this fine repair work can be done with great rapidity and precision. The charts are self-explanatory. If one will review his experience with

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inflammatory conditions of the abdomen, it will be made apparent that the mortality is not always proportionate to the mere amount of involvement of the peritoneum, but that it is proportionate to the complications of the peritonitis—namely, adhesions, obstructions, distal abscesses, or due to the location of the primary infecting source. The appendix in the retrocecal position will give an early death with few symptoms of peritonitis. There may be little or no distention, very little tenderness, a comfortable patient, but a chill and the increase pulse rate tell the story. Will the physiological operator of the future be familiar with the symptomatology of the deeper lesions; will he be prepared to cope with the complications which follow his imperfect work? Can a teacher say to 500 pupils that an operator's duty is practically ended when he discovers pus in the abdominal cavity? Will not this teacher's surgical offspring be a most helpless fellow; will not his view of living pathology degenerate?

In comparison, how little value has been our knowledge gained from postmortems compared with that of living pathology seen on the operating-table? From a large associate and personal experience I am prepared to say that the profession is not justified in its contention, that dangers of peritoneal absorption prevent the removal of the distal infecting source and its complications. Metchnikoff, in his book on prolongation of life, writes entertainingly in regard to the relations between longevity and the intestinal flora. He calls attention to some striking arguments in favor of the view that intestinal flora shorten life. If this is so in the healthy animal, how can we afford to ignore the absorption which takes place from the peritonitic and obstructed bowel?

Mr. Treves says the mortality of intestinal obstruction was reduced 50 per cent. when we learned to puncture the bowel proximal to the obstruction. This is perfectly familiar to us all and simply means drainage of the bowel. Dr. Murphy truthfully says that the abdominal incision in a peritonitis prevents absorption as it lessens intraabdominal tension. This again is peritoneal drainage. Since the dawn of the physiological era in surgery it is interesting to note the trend of our literature. Numerous symposiums appear on postoperative intestinal obstructions, persistent fistula, secondary operations for distal abscesses, and how to deal with postoperative adhesions.

The nerve specialists are prolific in their literature on postoperative neurasthenia, which simply means that great mor-

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bidity which comes from incomplete work. Some small focus or adhesion remains to irritate and nerve rack the patient. In dealing with an intraabdominal condition which has a potential element of sepsis and whose symptomatology is not proportionate to the extent of the pathological lesion, that law or rule which surgically gives us early the greatest number of patients must be adopted.

In reviewing the statistics, it is interesting to note that practically all operators have divided their statistics of appendicitis into two columns. In the first column we find 500 or possibly a 1000 with catarrhal or fibroid appendix without a death.

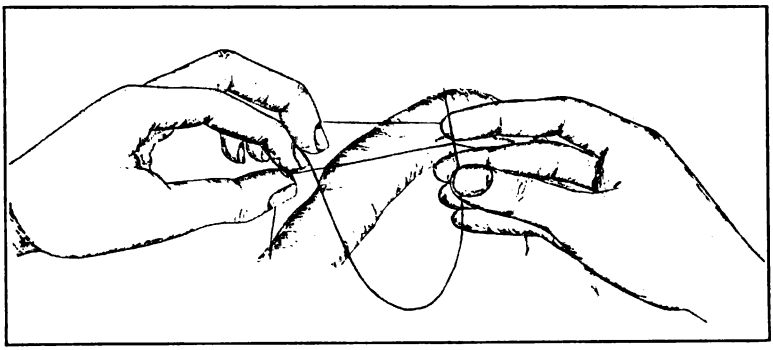

FIG. 4.—Needle held between the middle finger and thumb as it is passed beneath the suture.

In the other, are the septic patients with high mortality. Certainly in educational centers it is within our limitations to push that second column into the first and still have no mortality. It is evidently the fault of the specialist that there exists a mortality in certain septic lesions. For instance, it is the duty of the specialist to familiarize the general profession with the fact that the classical symptoms of appendicitis vary with its anatomical location or position. It is an organ without a known function, therefore we may expect great variance in morphology and location. Darwin in his work on "Origin of Species" says "rudimentary organs from being useless are not regulated by natural selection and hence are variable." A strict adherence to classical symptoms of most any abdominal lesions will lead to diagnostic confusion and bewilderment. Medicine is not an exact science and we cannot apply rules which are mathematical in their execution.

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Diagnostic knowledge through chemistry and the microscope are scientific in their revelations, but they are often at error when applied to medicine and surgery. The province of the specialist is just this: he must give the general profession that tangible information which makes him an acute diagnostician and an intimate cooperator for early surgical intervention. This cannot be done by an attempt at classification of symptoms of acute infectious conditions whose character or whose extent of pathological involvement is not in accord with its true symptomatology. I have repeated this. I feel its magnitude and I know it is the stumbling block of our profession. A death from appendicitis is a positive insult to our intelligence of the diagnosis, symptomatology, and treatment of this condition. I have said in a former paper on peritonitis that any death from appendicitis is a human error and that error I will place at the specialist's door until he becomes an advocate of first-hour surgery at any stage of a peritonitis and executes that surgery which removes the distal infecting source. Follow this rule and you will be astonished by the stimulant it is for early work.

In certain communities we were positive before seeing the patient that it was not appendicitis but peritonitis for which we were being called, and even the nurses in packing the bag knew it was useless to put in abdominal sutures, as all incisions were open ones in that community. What occurred? We stopped talking about the symptomatology of catarrhal gangrenous or appendicial abscess, said nothing about when to operate, and taught that appendicitis simply meant diagnosis and removal of the appendix. To-day we inclose our incisions in these communities and there are no deaths. You may discuss as much as you please the symptomatology of the various forms or varieties of acute infectious lesions of the abdomen, but let your discussions be postoperative with the specimen before you and be sure it is all there.

Some of the most ardent advocates of the physiological era in surgery become positive obstructionists to early work when they speak of the necessity of an inflammatory reaction or leukocytosis before it is safe to enter the abdomen. How about the removal of the big fibroid uterus or cystoma? There is no leukocytosis in these conditions; the surgery is extensive and yet the mortality should not be over 1 per cent. The truth of the matter is, we have advanced our skill through aseptic surgery to that degree of refinement that the only deaths we should have

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are where there has been some previous occasion for a leukocytosis. Certainly there is no death rate from the removal of the fibroid or catarrhal appendix. There is little doubt but that the physiological era will give us later work, which means an extension of the pathological condition with its resultant complications, and untrained men to deal with complicated surgery.

Contrast the sequelæ of pathological and physiological surgery. The pathological operator seeks the distal infecting source and removes it or finds the ultimate perforation and closes it. His surgery is practically void of complications. His work was

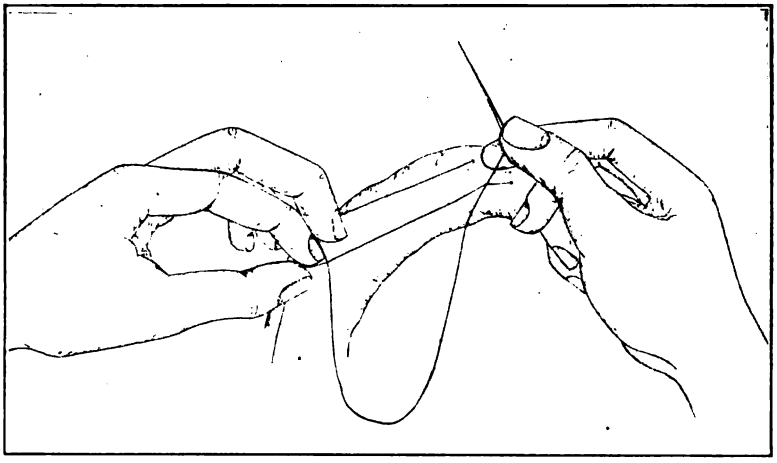

FIG. 5.—Needle advanced by thumb, stepping from middle finger to index, and carried on.

completed primarily. In my report of 500 cases in the *Journal of Surgery, Gynecology and Obstetrics* of diffuse and general peritonitis, demonstrated as such, there was not a patient reoperated upon for postoperative intestinal obstruction or for distal abscess; and the reason is apparent. On the other hand, physiological surgery is followed by great morbidity, complications, surgical neurasthenias, etc., which must follow incomplete work. This is not the age to begin preaching unfinished surgery nor the time to elaborate on minor differences of surgical technic, but is an age of generous asepsis which permits radical surgery. We take the stand in pathological surgery that pus is not a pathological entity but is the trail of the offending lesion; therefore, instead of our surgery ending with presence of pus in the incision, to us it is a command to seek the offender. If primary

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mortalities of the physiological and pathological surgeons are the same, how much greater will be the morbidity and complications of the physiological man who is not reaching the primary infecting source. I can scarcely imagine an up-to-date surgeon abandoning an acute infectious lesion, without even an accurate knowledge of whether he has drained a pyosalpinx, perforated gall-bladder or a suppurating appendix. This I apprehend will be one of the destinies of the era of physiological surgery.

Recently, in the Coatsville Hospital, I opened a large abscess bulging at McBurney's point for a supposed suppurating appendix. The patient had every cardinal symptom of appendicitis, even to the large collection of pus at appendicial region. Probably a pint of pus flowed from the incision over the appendix. Had my surgery stopped here, the death certificate would have been appendicitis. Pathological surgery called for the offending source. The appendix was delivered, it was acutely involved but not the source of the pus, which came from a perforated gall-bladder full of stones. The stones were removed, bladder drained, and the patient made a good recovery. It would be uncharitable to say we were wrong in our diagnosis, as I feel that an appendix floating in an abscess cavity might cause even the most skeptical to think of appendicitis. I simply relate this case which is the type of a condition which must add to the mortality of the physiological surgeon.

The very execution of a completed toilet is a strong plea for radical work. Its demonstration of living pathology is an imperative command to seek the root of evil. From an extensive association with pathological surgery for acute infectious lesions of the abdomen, I am in a position to say that no modern surgeon should ask us to witness the unremoved gangrenous appendix, the punctured vaginal vault for pyosalpinx, or the suprapubic drainage of the pyosalpinx with the pathology remaining or mere puncture surgery from above or below, for suppurating ectopic pregnancy, nor should we be asked to view the mere incision and drainage of the dermoid cyst. Nor is it fair to assume that the closure of any single perforative lesion of any viscus is the only perforation, and that further search should be precluded on account of the possibility of spreading infection. Yet we have recently seen all of this by operators who are not willing to accept the privileges of modern aseptic surgery.

When the last fable has been told in regard to differential

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operative stages of acute infectious conditions and we are driven as a solid phalanx for first-hour surgery, then, and not until then, will we reach the benefits of the surgical privileges which are within our grasp. If any operator can take more privileges than we, let us discover that operator. I am convinced that the danger of absorption of toxins and bacteria is greater from incomplete toilets than from the radical work of the pathological surgeon. The difficulty is, we have only had in mind the parietal and visceral peritoneum in our conception of absorption.

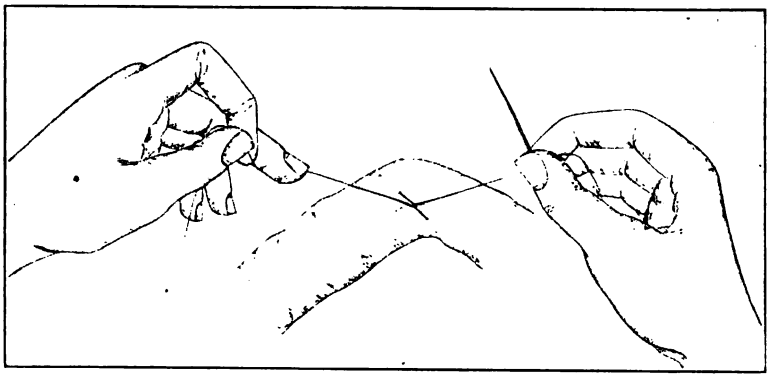

FIG. 6.—Suture seated by slight lateral pressure by the middle finger of the left hand.

In a discussion of pathological surgery of the abdomen one can quickly dismiss the lesion *per se*, but must deal extensively with its complications. Peritonitis as an entity cannot be surgically treated, while its complications remain ignored. If the physiological era of surgery in peritonitis is born to prevent toxic absorption from an endothelial membrane, without surgical respect to the complications of this condition, it is of ignoble birth and frailty will be its monument.

It is my opinion that a patient with a general peritonitis who has no distention but soluble bowel dies from a retroperitoneal infection, which is largely a lymphangitis, thrombosis, and cellulitis. These conditions are the least accessible to surgery, are similar too and have their type in the puerperal infections. Again, in the general peritonitic abdomen with obstruction and distention, we cannot dismiss the virulent absorption which takes place from the mucous surface of the obstructed bowel, and I believe this to be a more important

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factor in the absorption of toxins than the peritoneal surface. Therefore we cannot adopt that line of surgery which ignores the complications of a peritonitis when the effect of such complications may be the most potent factor in absorption of toxins and bacteria.

In acute infectious conditions of the abdomen I would give the following as some of the good reasons that fatal absorption takes place independently of an extensive peritonitic membrane.

First, we have many examples of vicious and fatal intra-abdominal toxemia independent of a peritonitis.

Second, in a very local peritonitis causing bowel obstruction the patient dies from a toxemia due to absorption of toxins which takes place from the mucous membrane of the obstructed bowel.

Third, a bowel obstruction from any of the numerous causes is a fatal lesion independent of a peritonitis.

Fourth, those deep-seated lesions having their type in the puerperal infection or the appendix in the retrocecal position are fatal lesions before they become a diffuse peritonitis and, indeed, we may say they are fatal before there is truly a peritonitis.

These are all convincing evidences to me, that intraabdominal septic conditions cannot alone be surgically treated along the lines of antiperitoneal absorption. Certainly there has been a retrograde movement in the surgical treatment of septic conditions of the abdomen in the past two years. It is due to incomplete work and from attempts to distinguish between operative and nonoperative stages in peritonitis. The great abundance of literature on postoperative complications and sequelæ show we have not the true surgical range.

Dr. Price with his characteristic epigram comes out with a paper on "Surgical Scrap and Junk." It is the duty of the specialists tó turn out more competent operators, men who are grounded in the importance of early and thorough work. The physiological era will not do it. The great personal and financial sacrifice which Dr. Price has undergone in his eagerness to place in every community a competent operator, so that the acute infectious conditions can be met early, is a lesson to us all. The distance has never been too great nor the audience too humble to prevent his leaving personal affairs and giving an object lesson to an eager profession.

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CONSERVATIVE SURGERY OF THE UTERINE APPENDAGES.*

BY
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Winston, N. C.

CONSERVATISM in surgery is ideal. It is the end for which all strive; and differences in degrees of its accomplishment are only due to differences in conception of its meaning. In using the term we mean not only conservation of tissue and of tissue structure as it pertains to an organ and its neighbors, but conservation of organic function as well; and forgetting this we become, not surgeons, but mere mechanics, falling far short of the best good for the patient.

To the removal of an organ entire, if it is diseased, the economy at large will be submissive and accomodate itself to the loss; but a perversion of function invites erratic processes, and will create a pathology which may be both beyond remedy and of very great danger. Coming before an audience of masters, of pathfinders, I feel very humble indeed; my chances of investigation being meager in proportion to my want of light; and yet, I believe that there is something in my theme, and it is the sincerity of motive alone that gives me courage.

All of the functions of the procreative organs of woman are accomplished in cycles, of turgescence and of retrocession; at periodic intervals of comparative regularity, the currents come and go. These currents mean not only an influx of blood to the pelvis and its organs, but an awakening of nerve fiber and of tissue change as well. The delicate and beautiful structure of the ovaries and Fallopian tubes are essential to the proper fulfillment of their normal functions; and a careful study and understanding of them in minute detail is also essential to an avoidance of hurt, rather than help, to their vital mechanism.

Pardon me for going back for just a moment to our student days and giving a thought to physiology, the most beautiful as well as the most practical branch of our science, because it gives us all things with the glow of health upon them. Let us get a mental picture of the virgin reproductive organs just at

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maturity, without sequelæ of exanthemata and before the access of marital relation, with all of its possibilities, has distorted their perfection of arrangement. A pear-shaped uterus, with a normal inclination just a little forward, swinging between the bladder and the rectum on its vaginal and ligamentous supports, and forming thus the body of the "bat" whose outspread wings, on either side, are of so much interest because of the beautiful part they play in the process of procreation. Nestled within the broad ligaments, which contribute to the make-up of the outspread wing, the ovary lies, quiescent and expectant, awaiting the responsive clasp of the delicate fimbriæ, so beautifully arranged at each terminus of the Fallopian tubes, which form the inviting and receptive channels both of ingress and of egress between the uterus and the abdominal and pelvic cavities. Now let us picture for a moment these organs just matured and free from all disease or other injury, and their functions as we conceive them.

The uterus and its position are such as to invite travel, both in and out, along the Fallopian tubes, and the lining membrane such as to encourage the migrating spermatozoa in search of the factor essential to vital development. This factor, furnished by the ovaries at periodic intervals, but, I believe, most freely just after the menstrual epoch, finds its way into the uterus by way of the Fallopian tube, into whose channel it is taken by the clasp of its fimbria. In the normal woman the tubes are always patulous, the cilia of their lining membrane waving to and fro and favoring the normal currents, while their terminal fimbriæ, when she stands erect, and they are not engaged in their spasmodic clasp of the ovary, *float free, like a fish's fins in water.* How delicately beautiful and how delicately sensitive is this mechanism, and how very easy it is of perversion, through both pathologic and surgical agencies; and in doing repair to these structures, the question is not "will the patient withstand the procedure?" but "will normal conditions be restored, and normal functions retained?"

This picture is of normal conditions, with the normal and recurrent turgescence and retrocession of the menstrual wave, and at this epoch and also during the interval we must picture the ovary quietly maturing and throwing off its product, to be caught within the clasp of their outspread fimbriæ and started on its journey through the tube, to either find the vital element essential to its life and full development or, failing, to be lost.

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Before maturity and before the marital relations are begun, the exanthemata play the greatest part in distorting these organs and in marring the physiologic picture we have painted. By their inflammatory action the tubes may become congested and their lumen either partially or wholly obliterated, while an agglutinated fimbria, instead of *floating free*, will hold within its welded grasp an enlarged, or cystic, and very tender ovary. These conditions seldom clear up entirely and may last, perhaps, throughout a lifetime.

Of greater importance, because of their more destructive tendency, are the infections from without, which come after marital relations have been established; and chief among these, I believe, are gonorrhea and the wound infections of the puerperium. To dwell at length upon, or even to enumerate in full, the destructive ravages of these infections, would only be to make my subject tiresome; for they are classic and with them you are all familiar. For instance, and notably, the gonorrheal pus tube, with destruction of its fimbriæ and resultant clubbed extremity, accompanying which there may be agglutination of all surrounding structures with, perhaps, an abscessed ovary as well. Of equal danger and of equally destructive tendency, are the infections gaining access through the traumatisms of a normal childbirth, or the traumatisms of either a criminal or a simple, incomplete abortion. Such accidents often leave the pelvis blocked with exudate, which is very slow in clearing up sometimes, and yet, throughout its progress, we cannot determine a localized pus collection. Finally, it may clear up, as has been witnessed in my own experience many times, short of ocal pus collection, but leaving in its wake, in a very large majority of cases, permanent injury to the functional structure of tubes and ovaries.

Now, the question is not, can we open these women and do conservative repair to these delicate organs? but, will this repair lessen or increase their dangers for the future? To-day we know that the small cystic ovary is a very common occurrence, and we do not believe that they should all be removed. If clean, with a free fimbria, and also free from infection, puncture of such cysts, or even the removal of small sections of the ovary, are conservative and helpful; this does not interfere with function, but when function is abolished, as it must be with the club-shaped tube bereft of its fimbriæ, we should not lose the mental picture that should always be before us, of the physio-

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logic functions of the structures with which we deal; and remember that such structures, so bereft, become only foreign bodies, and may be guilty of most erratic doings. In creating scar tissue anywhere, without just cause, with its possibilities of reflex scar-tissue neuroses, we substitute an organic for a functional disturbance, and the inherent expulsive function of the procreative organs of women resents scar tissue and favors resultant scar tissue neuroses. Furthermore, leaving such a tube so bereft of fimbriæ and patulous is a very inviting and dangerous thing indeed. However much the patient may desire a conservative operation, with a possibility of future conception, she does not care for one that must only be fraught with danger, and may be fatal.

Thus, a patulous tube, perhaps with a distal amputation and bereft of fimbriæ, left within the pelvis, can only be a menace to its owner. The ovary, however, seared by the conflagration through which it has passed, continues to produce an ovum now and then, which is thrown off to seek and never find its proper route of travel. The tube, with its delicate arrangement of fimbriæ and ciliæ so adapted as to constitute this route, is so perverted that it can only act as carrier from without, receiving from the uterus the male product and depositing it within the pelvic cavity, where it may be lost or where it may meet its wandering mate, and do much havoc by the meeting.

Such cases, I firmly believe, are far better let alone than incompletely done. In the one case, without infection from pus, we have only the foreign body, to the accommodation of which there will be eventually some tolerance. In the other we have not only the scar tissue but the doubly distorted organ, with a perversion of function that invites a fatal accident. Therefore, in perfecting our technical mechanics, let us not forget the very delicate and sensitive vital mechanism with which we deal, and let us find in the total removal of a permanently crippled structure not only the safest future for the patient, but also the ultimatum of ideal conservatism.

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GYNECOLOGY AND THE COUNTRY DOCTOR.

BY
BENJAMIN R. McCLELLAN, M. D.,
Xenia, Ohio.

UNDER the name of "Country Doctor" the writer would include all those who practise medicine in a territory not readily accessible to a hospital with modern equipment. It is true that among the pioneers in this most important specialty are to be found the names of McDowell, Sims, and others, who were distinctly country doctors; yet it remains a fact that the rank and file of the present-day country doctors are deplorably deficient in their equipment for the important and exacting duties of this specialty.

It cannot be doubted that the physical welfare of womankind in the country is quite as important as it is in the metropolis. While hygienic and sanitary conditions in the country are more favorable than in the cities, yet accidents due to parturition as well as the ravages of venereal diseases are scarcely less common in the former than in the latter; therefore it is an unhappy commentary that compels us to record the fact that the women in the country districts do not receive the prompt and efficient help that they deserve. Especially is this true of the most deserving of all, namely, those who have borne children. Some observer has said that within a radius of six miles of even the smallest villages, there are enough neglected women in need of trachelorrhaphy and perineorrhaphy to keep one surgeon busy. This undoubtedly is an exaggeration, yet it is nevertheless true that in every country community this most deserving clientele is more or less neglected, and thereby robbed of health and happiness that it is the first duty of our profession to vouchsafe to them. It is the object of the writer to emphasize this fact, and to briefly study the reasons why it is true, and to modestly offer some suggestions as to how this unfair and unhappy state of affairs can be corrected.

Even admitting that the present-day medical school training is adequate to the needs of the general practitioner, which it is not, it would still remain a fact that the young practitioner would

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ordinarily allow his knowledge of gynecology to lapse into a neglected state of suspended animation during the early years of his professional life, because the average American woman will not readily confide her sex disabilities and diseases to the young doctor only recently graduated in the art and science of medicine and surgery. It is not until he has proven his worth in other cases and along general lines, that she trusts him fully. It therefore often happens that years have gone by without much opportunity to deal with gynecological subjects, during which time, if the doctor is reasonably successful, he has become engrossed with other problems and is too busy to attend to the exactions of an office practice. Indeed, so little of his time is spent in his office that it might with greater propriety be called his supply-room. It is so unkempt that it is about the last place to which a refined woman would think of going in search of advice, which would usually mean a physical examination in order to arrive at an adequate diagnosis.

It therefore happens that only the most distressing and extreme gynecological cases actually come under his observation and challenge his interest. Such cases are usually transported at once to the most convenient hospital, ofttimes with scarcely an attempt at accurate diagnosis.

The more busy the country doctor becomes with house to house visitation, the less careful and painstaking he becomes in his gynecological examinations and the recording of data so necessary to successful diagnosis. There should be little wonder at this when it is remembered that such a man spends much of his time upon the road, has no regular hours for rest, and practically none for relaxation and recuperation of his physical powers. Indeed, he finds himself so bankrupt of these that he is wholly unfit for the exacting requirements of office-work.

The medical shools should provide a more practical course in gynecological diagnosis, and should lay greater emphasis on a working knowledge of pathology as seen in the living rather than in the dead subject. Along with this should go more thorough teaching in laboratory methods of diagnosis as they apply to gynecology. However, progress along all lines of work is so rapid that the postgraduate school has become a positive necessity, and is doing splendid service in uplifting the tone of our profession by keeping the progressive doctors posted as to all that is helpful in the matter of scientific discovery and especially as to the improvement in methods of diagnosis and treatment.

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All honor to the men who lead the vanguard of progress. But we must not lose sight of the other fact, namely, that a chain is only as strong as its weakest link, and the man who travels in the well-worn ruts in the road of bygone methods is not only in great danger of losing himself professionally but is doing much to lower the tone and diminish the influence of the profession as a whole. Therefore it becomes necessary to bring this post-graduate work to the reactionaries in our ranks who cannot or will not go to the medical centers for instruction. In extenuation of this state of affairs it must be admitted that the country doctor is ofttimes so much underpaid that it is impossible for him to leave his work and spend sufficient time in search of new and helpful knowledge.

It is here that the medical societies have their greatest opportunity for doing good, by arranging their programs so as to make them serve as veritable schools for postgraduate instruction. In doing so, the greatest good can be secured by making much of the clinical methods of instruction, especially in gynecological diagnosis and treatment. If the county society has not the advantages of an up-to-date hospital and laboratory, then it is up to the district society to arrange a series of clinics during its meeting, in which helpful instruction along these lines shall be provided. Happy the day when the State shall compel each county to maintain at least one good hospital, and shall provide that its clinical material shall be utilized by the county medical society, for postgraduate instruction of the entire profession of the county, whose attendance upon such instruction shall be compulsory. Then, and not till then, will the women of the country be given the medical and surgical attention which is their right; then, and not till then, will our profession be elevated to its rightful place of honor commensurate with its fulfilment of its great responsibilities to the people. Until that day, let those of us who live in country districts remember the words of Emerson, "If a man can write a better book, preach a better sermon, or make a better mousetrap" (or do a better perineorrhaphy) " than his neighbor, though he builds his house in the woods, the world will make a beaten path to his door."

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MULTIPLE CESAREAN SECTION WITH THE RESULTS IN THIRTY-NINE CASES, DONE AT THE NEW YORK LYING-IN HOSPITAL.[1]

BY
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Attending Surgeon, New York Lying-in Hospital.

IN the consideration of the permissibility of subsequent pregnancies in a patient on whom a Cesarean section has already been performed, the main query which arises in the minds of all thought ful and conscientious surgeons is as to whether or not they shall sterilize the patient at the time of the first Cesarean section, thereby rendering impossible a future conception. In this regard it would seem as if the operators who advise and follow such a radical procedure take upon themselves fully as much responsibility as is desirable for them to assume, inasmuch as the principle involved is not alone one of medicine or surgery, but is also of considerable ethical importance, both to the community in general as well as to the husband and wife in particular.

Much has been written on this subject and many authors present views widely at variance with each other. Green (1), considers that it is not justifiable to sterilize the woman in any case, stating that if after Cesarean section pregnancy ensues the responsibility rests with the obstetrical surgeon, but that the responsibility for the woman's condition rests elsewhere. Polak(2), in an exhaustive article on this subject, believes that the following questions are necessary for discussion: First, "The ethical question and its importance to the community and the parties concerned." Second, "The dangers to which the woman is subjected by repetition of the operation in cases of Cesarean section following pregnancy, as well as the possible danger of rupture in succeeding pregnancies." He believes that the question is one to be decided from a scientific point of view, and that in every case, after recovery from the first Cesarean section, the patient, her husband, and her immediate family, should be informed of the prognosis and treatment in the event of her again becoming pregnant. DeLee (3), remarks, "The question as to whether either parent has the

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right to demand that either be rendered sterile, is one that cannot be answered offhand. It is very broad and involves the principle of sociology, ethics, and religion." Sinclair(4), does not approve of sterilization except in special cases, such as fibroids, carcinoma, etc., both on moral grounds and on account of the greater gravity of the operation, due to the extra amount of time consumed. Garipuy(5), considers that the operative difficulties involved in multiple Cesarean section may require certain modifications of the technic, but that sterilization is indicated only in a small proportion of the cases.

Such representative views as the foregoing may be safely taken, it is believed, as the opinion of the great majority of obstetricans who have devoted much consideration to this subject, and with them the writer is in hearty accord. All things being equal or nearly so, he believes that there is no more reason why a patient should be sterilized after Cesarean section than before, and hopes to be able to demonstrate this fact by the series of cases quoted below.

Let us take up the question now in its different phases and see what are the objections raised to the repeated operation and what, if any, are its dangers. These may be considered as, first, the ordinary risks of any laparotomy, such as sepsis, hemorrhage, shock and anesthesia; second, the dangers of rupture of the uterus through the scar of the previous operation; third, the formation of adhesions between the uterus and abdominal contents of the parietal peritoneum.

With our present knowledge of the technic of abdominal surgery in general and of the operation under consideration in particular, it does not seem as if the first question ought to be considered as a very serious one, and there should not be as much danger to the mother in a properly conducted elective Cesarean section as in a difficult high forceps, if indeed there is as much, and practically none to the child. In connection with this statement the writer would observe that if in general more attention were paid to the surgical sterilization of the patient the necessity of considering functional sterilization of the same individual would be very much reduced. The patient should be carefully prepared, anesthetized by a competent anesthetist and the surgeon should have trained assistants. When the operation is begun it should be conducted deliberately with due care to the essential points of the technic as in any other abdominal operation, at the same time remembering that the speed consistent with careful

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work is desirable. A faithful observance of these points together with a careful closure of the abdominal and uterine wounds in the manner to be hereafter described, will, it is believed almost entirely obviate the other so-called objections already mentioned.

While a few cases of rupture of the uterus through the scar of a former Cesarean section have been reported by Hussey(6), Henkel(7), Schneider(8), Mabbott(9), the consensus of general opinion seems to be that the accident is not common, as indeed must be the case when one considers the infrequency of its occurrence compared with the number of secondary operations which are done. Polak(3), believes that the danger of rupture of the uterus in secondary cases is considerable, quoting Olshausen and Brodhead on this subject. Henkel(7), however, states that Olshausen had only one rupture of the uterine cicatrix in a series of 120 Cesarean sections. Fitzgibbon(10), believes that there is considerable danger of rupture of the uterine scar, particularly after the patient has labor pains, although he offers no evidence to prove his views. Some interesting observations in support of the opposite opinion have reecntly been made by Mason and Williams(11), who showed in experiments on dogs that by proper suturing the union of the scar is just as strong if not stronger than the uterine muscle and should therefore be able to stand any strain which the latter can stand.

From his own experience the writer believes that this is true, but considers that there are certain factors which are necessary in order to obtain a firm and satisfactory union of the scar. These are, first, rigid asepsis; second, a considerable amount of care in suturing the uterine muscle, particular attention being paid to being certain that the sutures firmly surround the whole uterine wall. These should be placed fairly close together and tied with considerable firmness, as they tend to loosen with the retraction of the uterus. Of no less importance is the overlapping of the uterine peritoneum in the line of the interrupted sutures, thus burying them and reinforcing the scar. It is essential not to invade the endometrium with the uterine sutures, not only on account of the danger of infection, but also on account of the possibility of including the mucosa between the edges of the muscle. In this way foci of mucous membrane may in successive pregnancies be transformed by the ordinary method into decidual tissue, causing separation of the walls and subsequent weakening of the scar, thus allowing the uterus to rupture. In all probability many of the ruptures reported are due to this cause.

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The next point in the technic consists of the high incision in the abdomen, and on this depends, to a large extent, whether or not adhesions are formed between the uterus and abdominal wall. Considering the formation of adhesions, Sinclair(12), believes that it is desirable to secure close and extensive adhesions between the anterior wall of the uterus and the parietes, claiming that by this means the formation of omental and intestinal adhesions is prevented, in an area which may become the field of a future operation. He has endeavored to bring about this result in several cases, but with only partial success. In this he is in accord with Green(13), who reports a case where extensive adhesions between the uterus and abdominal walls were so firm that in doing the Cesarean section the peritoneal cavity was not opened at all.

In an editorial in the *London Lancet* for 1906, the statement is made that every effort should be made to produce adhesions in order to make the succeeding operations extraperitoneal. The editor makes this astounding statement, "In cases where the patient is not sterilized, in view of the possibility of future pregnancies, an attempt should be made to insure the formation of extensive peritoneal adhesions," and then naïvely adds, "Unfortunately we have no certain method of obtaining this desirable result."

It seems to the writer that too much cannot be said in condemnation of a statement so absolutely unsurgical in its tendency, especially when coming from so important a source as this well known medical journal. One of the main efforts of modern abdominal surgery is to prevent the formation of adhesions in the peritoneal cavity, and it does not need a very fertile imagination nor an extensive knowledge to know what may happen and has happened in cases again growing pregnant after fixing the anterior surface of the uterus to the abdominal wall; the anterior wall being fixed, has but little chance to expand during the growth of the uterus with the result that most of the uterine enlargement has to take place in the posterior wall, thereby thinning it greatly and rendering the danger of rupture far greater than through a scar well sutured in a careful and proper manner. The formation of abdominouterine adhesions for the purpose of making an extraperitoneal operation during the second pregnancy (which may never occur), should be relegated to the place of irritating injections into the sac for the cure of hernia instead of radical operation, and the surgeon who deliberately tries to produce adhe-

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sions does not, according to the writer's view, give his patients the best results of modern surgery. Such adhesions may cause dragging pain, intractable vomiting and other disagreeable symptoms, which may last the patient through life, or at any rate until a more or less unsatisfactory operation has been performed for their relief and it certainly seems as if too much emphasis could not be laid on the operator's making every effort in his power to *avoid* the formation of adhesions and to feel that at the secondary operation the fewer such he finds the more successful was the technic of the first. In order that this happy result shall take place it is, as already stated, essential to make the abdominal incision well above the umbilicus so that when the uterine wound is closed and the uterus contracted, the upper pole of the fundus will be below the lower end of the wound in the abdominal wall. The second factor is the careful suturing of the uterine wound with an overlapping of the uterine peritoneum, covering the through and through sutures as described by the writer in a previous article on the subject (14). During the operation as little manipulation of the uterus as is consistent should be encouraged and it is well to give ergot beforehand in order to stimulate early contraction. If the surgeon bears in mind these few simple precautions and watches his asepsis the chance of adhesion formation should be reduced to the minimum, and the patient should at the close of twelve to sixteen days have the uterus well involuted into the pelvis in normal position, freely movable and ready to be forgotten until the next pregnancy.

In the past nineteen years we have had at the New York Lying-in Hospital thirty-nine multiple Cesarean sections, of which short histories are appended.

CASE I.—Y.W. Conf. No. 16382. Para V. Justo-minor pelvis. Second Cesarean section done on this service. At the time of operation the uterine scar was normal. There were a few slight adhesions. A living child was obtained which died on the sixth day of hemophilia neonatorum. Mother was discharged well on the eighth day.

CASE II.— S.W. Conf. No. 10792. Para II. Second Cesarean section. In this patient the scar was thin. There were a few adhesions. The child and mother were both discharged well on the seventeenth day.

CASE III.—D.U. Conf. No. 14565. Para III. Second Cesarean section. The uterine scar was normal. There were a very

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few adhesions present. Mother and child discharged well on the fifteenth day.

CASE IV.— S.S. Conf. No. 10144. Para II. Second Cesarean section. Uterine scar of the previous operation could not be discovered. There were a moderate number of adhesions. Mother and child discharged well on the twenty-second day.

CASE V.—B.S. Conf. No. 15623. Para II. Second Cesarean section. Uterine scar was not to be found, and there were many adhesions between the abdominal wall and the uterus. Mother and child discharged well on the twenty-first day.

CASE VI.—J.S. Conf. No. 16039. Para III. Second Cesarean section. Uterine scar was not to be found. Many adhseions present. Mother and child discharged well on twenty-third day.

CASE. VII.—M.S. Conf. 7566. Para II. Second Cesarean section. Scar of previous operation normal. No adhesions present. Mother and child discharged well on the twenty-fourth day.

CASE VIII.—M.S. Conf. No. 12836. Para III. Third Cesarean section. Scar of previous operation very thick. No adhesions to be found. Mother and child discharged well on the sixteenth day.

CASE IX.—K.S. Conf. No. 8882. Para II Second Cesarean section. Scar of former operation not found. No adhesions present. Mother and child discharged well on the nineteenth day.

CASE X.—A.P. Conf. No. 1756. Para IV. Second Cesarean section. Uterine scar of former operation found to be slightly thinned. Few adhesions present. Mother and child discharged well on the twelfth day.

CASE XI.—M.R. Conf. No.8916. Para II. Second Cesarean section. Uterine scar found normal. Very few adhesions present. Mother and child discharged well on sixteenth day.

CASE XII.—M.R. Conf. No. 11659. Para III. Third Cesarean section. Uterine scar found to be normal. Very few adhesions present. Mother died from anesthesia on operating table. Child discharged well on thirty-second day.

CASE XIII.—I.M. Conf. No. 13930. Para II. Second Cesarean section. Uterine scar found to be normal. Very few adhesions present. Mother and child discharged well on the twenty-first day.

CASE XIV.—M.L. Conf. No. 12542. Para II. Second Cesarean section. Uterine scar very thin; excised, uterus sutured

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and Fallopian tubes excised. No adhesions present. Mother and child discharged well on the thirty-third day.

CASE XV.—A.L. Conf. No. 14708. Para II. Second Cesarean section. No adhesions present. Scar thin in uterus; excised. Mother and child discharged well on eighteenth day.

CASE XVI.—S.K. Conf. No. 15494. Para IV. Second Cesarean section. Justo-minor pelvis. Uterine scar found to be normal. No adhesions present. Mother and child discharged well on the twenty-sixth day.

CASE XVII.—M.H. Conf. No. 7924. Para III. Second Cesarean section. Justo-minor pelvis. Scar of former operation found to be normal. Few omental adhesions present. Mother and child discharged well on the twentieth day.

CASE XVIII.—R.H. Conf. 11956. Para II. Second Cesarean section. Flat Justo-minor rachitic pelvis. Uterine scar not found. No adhesions present. Mother and child discharged well on the twenty-third day.

CASE XIX.—R.H. Cont. No. 16104. Para III. Third Cesarean section. Uterine scar found to be normal. No adhesions present. Mother and child discharged well on fifteenth day.

CASE XX.—N.G. Conf. No. 6649. Para II. Second Cesarean section. Justo-minor pelvis. Uterine scar not found. Very few adhesions present. Mother and child discharged well on the eighteenth day.

CASE XXI.—N.G. Conf. No. 11481. Para III. Third Cesarean section. Jutso-minor pelvis. Scar of previous operation normal. Many adhesions present. Mother died on fifth day of pneumonia. Child discharged well on fifth day.

CASE XXII.—F.F. Conf. No. 15247. Para IV. Second Cesarean section. Flat pelvis. Scar of previous operation not found. No adhesions present. Mother and child discharged well on the thirty-eighth day.

CASE XXIII.—A.D. Conf. No. 10128. Para V. Second Cesarean section. Uterine scar found to be normal. No adhesions present. Mother and child discharged well on the eighteenth day.

CASE XXIV.—P.D. Conf. No. 16092. Para V. Second Cesarean section. Flat pelvis. Uterine scar found to be normal. No adhesions present. Mother and child discharged well on the eighteenth day.

CASE XXV.—M.C. Conf. No. 11199. Para III. Second Cesarean section. Generally contracted flat pelvis. Scar of

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former operation not found. No adhesions present. Mother and child discharged well on the twenty-ninth day.

CASE XXVI.—M.C. Conf. No. 14129. Para IV. Third Cesarean section. Uterine scar not found. Many adhesions present. Mother and child discharged well on the twenty-ninth day.

CASE XXVII.—L.B. Conf. No. 11202. Para II. Second Cesarean section. Justo-minor pelvis. Uterine scar found to be normal. Omentum adherent to the abdominal scar. Mother and child discharged well on the twentieth day.

CASE XXVIII.—L.B. Conf. No. 14933. Para III. Third Cesarean section. Justo-minor pelvis. Scar of previous operation found to be normal. Many adhesions present. Mother and child discharged on the thirty-fourth day.

CASE XXIX.—B.A. Conf. No. 11607. Para III. Second Cersaean section. Rupture of uterus through old cicatrix. Many adhesions present. Mother and child discharged well on the twenty-fourth day.

CASE XXX.—R.O. Conf. No. 3206. Para III. Second Cesarean section. Flat irregularly contracted pelvis. Uterine scar found to be normal No adhesions present. Mother and child discharged well on the twenty-seventh day.

CASE XXXI.—M.M. Conf. No. 3766. Para II. Second Cesarean section. Justo-minor pelvis. Uterine scar found to be normal. Many adhesions present. Mother died from peritonitis on the third day. Child discharged well on the nineteenth day.

CASE XXXII.—P.W. Conf. No. 4830. Para II. Second Cesarean section. Rachitic justo-minor pelvis. Uterine scar found to be normal. Few adhesions present. Mother and child discharged well on the twenty-nineth day.

CASE XXXIII.—R.O. Conf. No. 5747. Para IV. Third Cesarean section. Flat, irregularly contracted pelvis. Scar of former operation normal. Many adhesions present. Mother and child discharged on the eighteenth day.

CASE XXXIV.—S.P. Conf. No. 7398. Para IV. Second Cesarean section. Flat pelvis. Uterine scar found to be normal. Few adhesions present. Mother and child discharged well on the twenty-third day.

CASE XXXV.—B.G. Conf. No. 7664. Para II. Second Cesarean section. Flat justo-minor pelvis. Scar of previous

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operation not found. No adhesions present. Mother and child discharged well on the twenty-fourth day.

CASE XXXVI.—M.C. Conf. No. 9428. Para II. Second Cesarean section Justo-minor pelvis. Uterine scar normal. No note made of adhesions Mother and child discharged well on the twenty-third day.

CASE XXXVII.—R.O. Conf. 5747 Para V. Fourth Cesarean section. Flat, irregularly contracted pelvis. Uterine scar not mentioned. No note made of adhesions. Mother and child discharged well on the twentieth day.

CASE XXXVIII.—R.O. Conf. No. 11906. Para VI. Fifth Cesarean section. Flat, irregularly contracted pelvis. Uterine scar very thin—excised. Many adhesions present. Mother and child discharged well on the sixteenth day.

CASE XXXIX.—Y.S. Conf. No. 18638. Para III. Second Cesarean section. Justo-minor pelvis. Uterine scar normal. No adhesions present. Mother and child discharged well on the eighteenth day.

As will be seen, thirty cases were done for the second time, seven for the third time, and one each for the fourth and fifth times. In eighteen cases there were no adhesions present at all, in eleven very few, in seven there were many, in one the uterus was adherent to the abdominal wall and in two cases no note was made. The uterine scar of former operations was not seen in nine cases, was normal (by this we mean not thinner than the rest of the uterus), in twenty-five cases, was very thin in four cases, and was ruptured in one case, the latter being one where many adhesions were noted.

In the series there were three deaths of mothers; one from anesthesia, occurring on the table before the uterus was opened, the second from sepsis on the third day and the third from pneumonia on the fifth day. One child died of hemophilia on the sixth day.

Thus we observe from the foregoing analysis that the repeated operation offers very little danger over the primary and that in cases where some obstruction to labor exists such for example as, contracted pelvis, that there is no logical reason why the patient should not become the mother of a normal family with periods of quiescence and comfort between pregnancies, making the operation of sterilization unnecessary and, in the writer's opinion, as a routine measure distinctly unjustifiable. Ceasrean section, while not difficult in the hands of an experienced operator, requires

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strict attention to certain points of technic, which, as observed, should terminate in a successful result for both mother and child.

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FATAL MERCURIAL POISONING DUE TO VAGINAL INTRODUCTION OF BICHLORIDE TABLETS. REPORT OF THREE CASES.

BY
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CASES such as mentioned in the title of this paper have been reported, but it has not been my experience to observe any, other than casual reports merely relating the circumstances, without findings by autopsy. The cases in question came under my observation through my being called by the Coroner of Allegheny County, Pa, to hold autopsy for his information, to be used in his investigation of the causes of death.

In each case the deceased was told by someone to "use" antiseptic tablets, without any qualification of the term, and from the disastrous results entailed I would think the profession could draw a useful conclusion to the effect of being very careful about instructing patients in the use of this very serviceable but extremely toxic chemical.

CASE I.—Miss K., a young single woman, after an indiscretion, became apprehensive and appealed to her companion for a means to prevent pregnancy. He professed ignorance. but said he would inquire of the druggist. Upon said inquiry, the druggist sold him six 7.3 grain bichlorid tablets and told him to "use" them. This was done to the extent of inserting the tablets in the vagina. The burning pain that ensued caused her to try to remove the tablet, but she could not do it, on account of the reflex muscular spasm.

In the course of about thirty-five minutes a physician was secured, who gave intravaginal douches of warm water, and morphin hypodermically for the relief of pain. The physician who did this was positive in his statement that no remnants of the tablet could be found in spite of careful observation. The patient was removed to a hospital the same evening and in the course of a few hours developed intense symptoms of mercurial poisoning, salivation, enterocolitis, muscular tremor, suppression of urine with consequent uremia and collapse, dying four days later.

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FINDINGS AT AUTOPSY.

1. An intense, necrotic, exfoliative enterocolitis most intense in the rectum where it involved both mucous and muscular coats, which were so degenerated that they could be brushed away from the peritoneal coat with a slight scraping of the finger. This process gradually became less severe as the examination continued upward, but nevertheless was distinctly present as high as the duodenum.

2. A necrotic degeneration of the mucous and muscular walls of the vagina and vaginal portion of the cervix. The broad ligaments, Fallopian tubes, and ovaries were necrotic, but upon section of the uterus the mucous lining of the uterine cavity above the internal os was found to be normal in appearance and no perceptible change could be seen in uterine body structure, indicating, I would say, that the chemical irritant had been carried to the uterine adnexa and farther by the lymphatics.

3. No evidence of peritonitis.

4. The pelvic peritoneum posteriorly was dissected away from pelvic wall and distended by a collection of clear serum of considerable quantity, about 10 ounces.

5. The left kidney was the seat of a cystic degeneration and distended at its lower pole by a collection of cloudy serum about 1 ounce in quantity. The substance of both kidneys showed a marked fatty degeneration.

6. A well marked myocardial fatty degeneration most noticeable along course of nutrient arteries.

7. A parenchymatous degeneration of the liver and spleen, evidenced by enlargement, softening, and pale coloration.

CASE II.—A young married woman was told by a female friend to "use" antiseptic tablets for prevention of conception and followed this advice in the same manner as was done in preceding case. This case was taken to a hospital and treated by use of continuous enteroclysis, under which treatment she lived two weeks and for a time seemed to be on a fair way to recovery, when she went into collapse and died at the end of two weeks.

The autopsy findings in this case coincided in the main with those of the preceding one, with the exceptions that a perforation in the lower third of the descending colon had produced a general peritonitis, and a calcareous deposit along the course of the senal tubes could be clearly demonstrated.

Case III.—A young married woman was given the same advice

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as was given in Case II and followed it out in the same manner. Her physician arrived within twenty minutes and immediately gave her intravaginal douches of hot water and as soon as he could procure it used hot milk in the same manner. Following this she was placed upon continuous enteroclysis and apparently did well for three days, when she developed tremors and later on paralysis and died at the expiration of a week's time.

The autopsy findings in this case differed from the former ones only in the fact of showing marked evidence of passive hemorrhage in the most dependent portions of peritoneal cavity, and a large amount of bloody serous exudate beneath the brain membranes.

CONCLUSIONS.

I would conclude from the above findings that absorption in these cases takes place through lymphatics and is exceedingly rapid, as shown by the fact that within twenty minutes a lethal dose can be absorbed.

In each case the patient said that she tried to remove the tablet with her fingers but could not do it, because I would think of a reflex muscular spasm and the extreme pain with consequent nervous shock.

It would appear unless the offending tablet can be removed within a very few minutes that the person suffering from such an accident has a small chance for recovery, because of the far-reaching effects of the poison as shown by the autopsy findings in these cases.

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ETIOLOGY AND PATHOLOGY OF SMALL CYSTIC DEGENERATION OF THE OVARY.

BY
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THE modern history of cystic degeneration of the ovary began in 1855 with an anatomical study by Rokitansky. The clinical investigations were begun soon afterward by Hegar, Battey, Tait and Cruveilhier. The condition is known under the following names: cystic degeneration of the ovary; microcystic degeneration of the ovary; follicular degeneration of the ovary; follicular ovaritis; hydrops folliculi ovarii; dropsy of the Graafian follicles; cystic ovaritis; sclerocystic ovary; Rokitansky's tumor.

The subject is here presented, because, in the recent reports upon conservative surgery of the ovaries, the cases of cystic degeneration form a group of their own on account of bad ultimate results. The condition, moreover, is interesting because it seems to be the end-result of so many pathological conditions and processes in the female pelvis.

The ovary like the kidney has a hilum at which enter the blood-vessels, lymphatics and nerves. Extending inward form the hilum is a central core or medulla. It is composed of white fibrous tissue and smooth muscle cells and transmits the larger vessels and nerves inward from the hilum. Radiating outward through the ovary from the medulla are fibrous bands which form the larger framework of the ovary. Between the medulla and the external surface lies the cortex. It is made up of a fine stroma of white and yellow fibrous tissue, elastic and smooth muscle fibers. In the cortex, besides bloodvessels, lymphatics and nerves, are the spindle-shaped interstitial cells and the Graafian follicles. Immediately without the cortex and forming a sort of capsule for it is the strong fibrous tunica albuginea. The epithelial covering of the ovary is derived from the germinal epithelium covering the genital ridges in the embryo. It is columnar or cubical not low or flat like the peritoneum and lies immediately upon the tunica albuginea. The surface of the ovary is smooth in youth but rough in later life. The epithelial covering, by dipping into the cortex, forms columns of cells which

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at times separate leaving isolated nests of epithelial cells in the stroma.

The Graafian follicles have their origin, probably, only in fetal life, from the germinal epithelium. The walls are derived from the ovarian stroma. The outer is fibrous and the inner, the tunica propria, is vascular. Lining the tunica propria is a layer of cells called the membrana granulosa and in a part of this, the discus proligerus, is the ovum. The cavity of the follicle is filled with a fluid, the liquor folliculi. Among these follicles in the stroma lie the remains of former follicles, the corpora hemorrhagica; corpora lutea and corpora albicantes.

The lymphatics of the ovary begin in and about the tunica fibrosa of the Graafian follicles and lymph spaces of the ovarian stroma. Converging, they are collected at the hilum into five or six trunks which follow the ovarian veins to the lumbar lymph nodes.

The nerve supply of the ovary is chiefly from the renal and upper aortic plexuses. The nerves follow the ovarian artery until just below the ovary where are many small ganglia which form the ovarian plexus, branches from which supply the uterus, tubes and overies. The ovarian branches follow the terminal arteries to the finest structures of the ovary even distributing themselves among the cells of the membrana granulosa of the Graafian follicles.

In gross appearance the cystic ovary is enlarged to several times its average size and is globular rather than elongated. The surface is nodular but smooth and glistening. The smaller ovaries are whitish with clear translucent areas over the most prominent parts of the protruding follicles, while the larger ovaries are almost entirely clear and translucent. The consistency is firm or more or less semisolid according to the degree of cystic degeneration present. The cysts themselves, in the ordinary case, vary from the size of a pea to that of an English walnut. However, the whole ovary may reach the size of a man's head and be made up of a single cyst or composed of many cysts from the size of a cherry to that of a large orange.

In one form of this disease, the true microcystic degeneration, the ovary is only slightly enlarged and the surface is little changed, but on section the ovary is filled with innumerable small cysts the size of millet seeds. The appearance is as if every follicle had simultaneously becomes slightly enlarged.

The contents of the cysts, in cystic degenerations of the ovary,

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although usually clear, may be cloudy or brownish. The fluid contains albuminoids, salts, chiefly sodium chloride, some cholesterin and a few epithelial cells and fat droplets. Formed elements are scarce unless hemorrhage or suppuration have taken place. The specific gravity is from 1005 to 1025 and the reaction markedly alkaline.

On gross section of the smaller ovaries, the tunica albuginea is thick and unyielding and the interfollicular tissue increased in amount. In the larger more degenerated ovaries the tunica and stroma are inconspicuous and displaced by cysts.

The microscopic picture in the cystic ovary varies greatly. The early cases show a considerable increase in the interfollicular tissue, with thickening of the tunica albuginea and the formation of a pseudomembrane on the surface of the ovary. The stroma, bloodvessels, tunica albuginea and corpora albicantes show beginning hyaline degeneration and atrophy. The arteries are thickened or obliterated. The stroma shows considerable round-cell infiltration and the vessels are congested. In the late cases, as the cysts increase in size and number, the interfollicular tissue atrophies and is displaced until it is spread thinly over the outside of the cysts or distributed in little islands between them. At this stage few normal follicles or corpora lutea can be found. In the small cysts, less then 1 cm. in diameter, normal ova are found but in diminised numbers. In cysts larger than this normal ova are rarely present. The walls of the smaller cysts show clearly the tunica fibrosa and tunica propria of the Graafian follicle, surrounded by a layer of atrophied ovarian stroma or even by the tunica albuginea. The epithelial lining of the cyst, at first low columnar or cubical, gradually becomes flattened and later may disappear entirely.

The primary or fundamental causes underlying the etiology of cystic degeneration of the ovary are inflammation and congestion. The secondary or immediate causes are, first, a primary infection, such as a gonorrheal peritonitis, next a secondary infection following a chronic congestion of the pelvic viscera, and thirdly various malpositions, injuries and tumors of the pelvic organs which cause hyperemia, congestion, edema or anemia of ovaries.

A primary inflammation usually begins as an acute infection of gonorrheal or puerperal origin. A perioophoritis with a pseudomembrane is present in the majority of cases. The ovary is enlarged and hyperemic while the stroma contains many round

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cells and much exudate. Many follicles are destroyed by this reaction. If an ovarian abscess is present the local condition is more serious because of the greater amount of hyperplastic exudate and destruction of ovarian tissue. Because of its own weight or that of the infected tubes or uterus the ovary soon prolapses and the congestion which follows causes the acute infection, which has been subsiding, to remain as a chronic one, producing greater thickening of the stroma and more destruction of the follicles.

A chronic inflammation may begin as a chronic inflammation but is nearly always preceded by a congestion due to a retroflexion or some other cause. The ovary becomes thickened not only from the continuous congestion but also from the chronic inflammation. This thickening of the stroma and of the coverings of the ovary just described make it more or less impossible for the maturing Graafian follicles to rupture so that they develop into cysts which as they increase in number and size gradually destroy the ovary. The common causes of chronic pelvic congestion are as follows: prolapse of the tubes and ovaries; retroposition of the uterus; prolapse of the uterus; tumors of the uterus, tubes and ovaries; chronic inflammation of the uterus and tubes; varicose veins in the broad ligament; twisting of an ovary on a pedicle; interference with the blood supply of the ovary by ligatures, scars and adhesions at operation; transplantation of the ovary.

The following are given in the literature as causes of cystic degeneration: insufficient menstrual congestion to cause rupture of the follicle; congestion and apoplexy of the follicles; catarrhal inflammation of the follicle; hypertrophy or arteriosclerosis of the ovarian artery.

The vast majority of writers agree that the cysts in question arise from Graafian follicles. However, a few hold that a considerable number of large Graafian follicles are normally present and that they nearly always contain normal ova. The cysts, they say, are derived from corpora lutea or from cells in the stroma derived from germinal epithelium. Undoubtedly a few small cysts do occasionally have such an origin. The corpora lutea cysts are rarely over 1 inch in diameter, the contents is dark and characteristic, lutein cells are present. The cysts from the cell nests are small, the contents is clear and the lining cells lie directly on the ovarian stroma. When any of these cysts become very large all structures indicating their origin are destroyed.

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Pseudo cysts we must admit are formed occasionally by the distension of lymph spaces or from hematomata in the ovarian stroma.

The origin of the liquor folliculi is important in this connection and has been the cause of much dispute. Originally it was supposed to come only from the membrana granulosa but more recent study has shown that it may also come from the tunica propria and from that source alone if the membrana granulosa is destroyed.

In cystic degeneration of the ovary the ova are destroyed directly by the inflammation, by the pressure of the contracting stroma or crowding cysts or by the distention of the individual Graafian follicle. According to Findley the absolute number of follicles is diminished. However the rarity of amenorrhea and the presence of corpora lutea show that all the ova are seldom entirely destroyed. As the process of destruction is a general one the remaining ova are doubtless distributed more or less uniformly through the remaining ovarian tissue. Whether the apparently normal follicles which remain have any intrinsic essential disease which will make cystic formation likely to occur, it is impossible to say.

It would be interesting to know whether these cysts are permanent or short-lived. If we drop a cystic ovary back into the abdomen to-day will the same identical cyst be there a year from now? If the liquor folliculi is a transudate dependent more or less upon congestion and inflammation, is it not probable that if the cause of this congestion and inflammation is removed, the liquor folliculi may no longer be produced in excess and the cysts either cease to grow or disappear? The increase of interfollicular tissue may also be absorbed like any scar tissue. Certain it is that these cysts do vary in size at times or even disappear entirely.

It is a general belief that a cystic ovary on one side will cause a normal ovary on the other side to degenerate. If this is true it is probably due to the congestion or chronic inflammation of the pelvic organs which so frequently accompanies the condition.

I am convinced that cystic degeneration often follows careless or rough operations on the pelvic organs by interfering with the ovarian circulation or producing pelvic adhesions.

That ovulation into the abdominal cavity without the possibility of the ovum reaching the uterus is harmful has been definitely settled in the negative.

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Whether the ovaries degenerate when left in place after simple hysterectomy is a mooted point. West, Tuffier, Pozzi, Carmichall and others hold that the ovaries do not depend upon the uterus for the continuation of their function or existence while Vautrin describes a definite impairment of the ovarian circulation and a hyperplasia of the perifollicular connective tissue after hysterectomy.

The following are a few practical conclusions: 1. Interference with the ovarian circulation explains many cases of very active postoperative cystic degeneration of the ovary. 2. Cystic degeneration involves the whole ovary and it is therefore impossible by partial resection to separate normal from abnormal ovarian tissue. 3. Partial resection reduces the weight of the ovary and this enables it to assume a position where it is less subject to congestion. 4. Partial resection produces harmful scars and adhesions. 5. Partial resection will be valueless if the concomitant pelvic lesions are not corrected. 6. Much doubt has been thrown upon the importance or very existence of cystic degeneration of the ovary as a pathological or clinical entity and doubtless many sins have been committed in its name chiefly by not remembering that what is anatomically pathological may not be so clinically. However, we are beginning to realize that it is a pathological condition which must be met with the greatest of care and judgment.

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PREGNANCY FOLLOWING OPERATION FOR EXOPHTHALMIC GOITER, WITH REPORT OF A CASE.

BY
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IN attempting to bring this subject before you I fully appreciate the fact that it is not a new one—that is, the disoder —but possibly it is not so often met with as some of the other complications of pregnancy, but as it does happen, and the literature is somewhat hard to find, I take this opportunity of reporting the case.

Miss S., age eighteen, housework, consulted Dr. Max Ballin April 10, 1907, for bulging of the eyes and swelling of the neck, palpitation of the heart, and general nervous symptoms.

On examination the following was noted: general appearance good; weight 135; height 5 feet 5 inches; development good; temperature normal; pulse 120; lungs negative; exophthalmus of the eyes; von Graefe's sign positive; Stellwag's positive; slight tremor of the hands; slight tremor of the tongue; —diagnosis, Graves' disease.

January 20, 1908, pulse 84; April 30, 1908, pulse 132, goiter pulsating. Patient now went to the hospital, treated with rest and ice-bags and seemed to improve.

April 10, 1909, of the following year, returned from New York where she had had a few radium treatments. Weighed 90 pounds; pulse 126; exophthalmus very marked; very marked pulsation of the goiter; diarrhœa of two weeks. Blood: hemoglobin 90 per cent.; polymorphonuclears 42.7; large 5.3; small 49.7; eosinophiles 2.3.

April 16, 1909, operated upon by Dr. Max Ballin at Harper Hospital, Detroit. Usual collar incision through skin and fascia, straight muscles split. Gland and capsule opened but extremely adherent to glandular substance at point where radium had been inserted under skin. Muscles, fascia and gland were adherent. Lateral accessory vein tied, clamp applied to superior pole, right lobe and across isthmus. Right lobe and isthmus cut away with difficulty, owing to firm ad-

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hesions. Superior thyroid ligated *en masse*. Tissues caught with continuous hemostatic suture. One piece of iodoform gauze to superior thyroid stump. Fascia sutured with catgut; skin with horse hair.

Shortly following the operation she was married, against the wishes of her family and friends for fear of the results of a probable pregnancy. Following the operation exophthalmus almost entirely disappeared, she rapidly gained in weight. The tremor of the tongue and hands disappeared. She became pregnant immediately following her marriage, suffering the usual discomforts of her condition, together with a return of the exophthalmus at the seventh month.

Mrs. B. came to me in the twenty-eighth week of her pregnancy. Exophthalmus marked, pulse of 82, urine normal. It was a question in my mind whether to terminate the pregnancy or let it go to full term. Would the induction of labor at such a time be as hard upon the heart as a full-time labor?

Realizing the condition of the pulse that would follow during her labor, it was my desire to shorten the second stage as much as possible.

She went into labor October 13, 1910, and was delivered the following day, after eighteen hours. Male, 8 1/2 pounds, vertex, R. O. A., cord once about the neck. Low forceps were applied to shorten the second stage. First degree laceration. Pulse rate at the beginning of labor 82; pulse at the end and during the second stage 160.

Immediately following the delivery the usual course of holding the fundus was followed, and the placenta expressed in forty-five minutes by the Credé method. Following the expression of the placenta came an almost uncontrollable hemorrhage. Uterus would not remain firm and hard, and when it was hard there was a very decided discharge of blood, much more than in a normal case. The fundus of the uterus was held during all this time and massaged as well, but the flow continued.

We now gave one bulb of aseptic ergot hypodermically, ℥ii fluidextract of ergot by mouth, hot saline douche, acetic acid douches, digital compression of uterus, ice pack to the uterus through the abdominal wall, and finally held the uterus for eighteen hours before it firmly contracted and remained so. The pulse rate now dropped to 100 and remained so for twenty-four hours, gradually dropping until, at the time of her discharge from the hospital, the rate was 88.

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There was no rise in temperature and she made an uneventful recovery.

As the exophthalmus was not marked until her seventh month of pregnancy, would it have been the right line of treatment to have put her upon some medication, or was surgical interference after Crile's method demanded. The exophthalmus is not so marked as it was during her pregnancy, but still exists to a very large degree. I leave that for you to answer, and also to give me the line of treatment for future use, as it is positive that a second pregnancy now exists.

I wish to take this opportunity to thank Dr. Max Ballin for his courtesy in letting me have his notes on his surgical work in this case.

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WHAT HAS BEEN ACCOMPLISHED BY OUR ASSOCIATION.

BY
ALBERT VANDERVEER, M. D.,
Albany, N. Y.

AT the meeting of the American Surgical Association, in 1887, the subject of the organization of the Congress of American Physicians and Surgeons, in the bringing together of the various special societies, was pretty thoroughly discussed. Later, some time before the annual meeting of 1888, Dr. William H. Masten, of Mobile, Ala., chairman of the committee on organization, informed me that the American Gynecological Society declined to participate. He was greatly disappointed by their action and was anxious to have another society organized that would include gynecology and, after further discussion, obstetrics.

It is not profitable at present to discuss the quiet undertone of opposition that existed in the American Medical Association regarding the Congress. These members were, in some instances, also Fellows of the special societies. After careful comparison of opinions on the question, it was deemed wise to organize the American Association of Obstetricians and Gynecologists. This was done by a representative body of workers from a number of States, at Buffalo, N. Y., April 19, 1888. The professional atmosphere at this time was ripe for the development of such work.

The first and second decades after the Civil War were periods when positive specialization by members of our profession took root and advanced with great earnestness. Between the time of our birth and the meeting in Washington, in September, 1888, for the organization of the Congress, the American Gynecological Society had reconsidered their previous action and concluded to become a part of the Congress. This placed us in a very embarrassing position. Many of the members of the American Gynecological Society were anxious to have us as members of the Congress, but not with the title gynecology in any form. In

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the long and forcible discussions in the Executive Committee of the Congress, of which the writer was cognizant, many suggestions were made. We were urged to change our name to that of Pelvic Surgeons and upon this basis to be admitted, also to give the Society the name of the American Association of Obstetricians. This would have excluded the interest and energy of the abdominal surgeon with gynecological instincts and practice.

All these suggestions were declined, and in the final vote, although our position received the energetic advocacy of many of the best in our profession, we were outvoted by a small majority. The suggestion was made at the next meeting of the Congress that we drop the title of gynecologists and become an integral part of the Congress, but our Council has never recommended such action. At our meeting in Buffalo we elected Dr. William H. Taylor, of Cincinnati, Ohio, as our president, and I would advise every Fellow who at the present time has not read his inaugural address to do so. The high ideals there marked out we have endeavored to live up to. It is an historical fact of keen sympathetic interest that at this meeting a paper is to be presented, "In Memoriam, William Henry Taylor: An Appreciation," by Charles Alfred Lee Reed, Cincinnati.

Soon after our organization many other special societies developed, particularly the Southern Surgical and Gynecological Association, whose last meeting, at Hot Springs, Va., was a most memorable one, showing an amount of vigor, intelligent presentation and discussion of papers creditable to any society. It impressed one greatly as in keeping with our own successful efforts.

The work of our Association along the line of cleaning up of pus in the pelvic has been one of the most impressive of that accomplished by any society. Few subjects have been presented so forcibly, together with the discussions, as that of pelvic abscess, its methods of drainage, its clear pathology in the involvement of the tubes and ovaries, and, finally, abdominal section with drainage; also the research study in pathology, presenting the etiological factors, all has given a most brilliant reward to the efforts of the various Fellows in relieving suffering and in making the understanding of these cases clear and distinct at the present time. The same may be said of all work within the pelvis. Few societies have accomplished more.

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Its first series of papers on extrauterine pregnancy were most brilliant, particularly the line of discussion that has resulted in clearing up this field of surgery in such a masterful manner. The various special subjects that have been worked out with great care from time to time have made a strong impression upon the profession at large. Obstetrical questions, the use of the short, the long, and traction forceps drew out most interesting discussions that were practical and of great value to the general practitioner. The gradual steps in the treatment of fibroids; the extraabdominal treatment of the pedicle; how gradually it vanished under the close observation of the abdominal surgeon; and, at last, the intraperitoneal treatment in doing the supravaginal operation became the established method. The members of our Association can claim a full share of these advances in which early diagnosis and operations have been advocated.

In the repair of lacerations and injuries done to the female organs of generation during parturition the Association has shown a keen interest and advance in all of the various investigations and research made in this department. The volumes of its Transactions have been well received and reviewed with a fearless earnestness that has brought out other good points, setting men to thinking and considering their work in a spirit of better understanding, with general criticism beneficial to all concerned. It is not possible for one to consider individual papers or to go over the subject completely regarding the various symposiums held. The diagnosis and treatment of the septic uterus and appendages, from the obstetrical standpoint, has been of great practical value. The subject of cancer of the uterus and of appendicitis, more particularly, has received most intelligent treatment.

The discussions at times have been sharp, keen, and beneficial to those in attendance and to those entering into the discussion of the subject presented. Many problems have been solved, many obscure subjects have been studied, and by the aid of the laboratory bacteriologist and pathologist solutions have been given bringing successful treatment. There are unsolved problems before us, perhaps no one so important as that of the etiology and treatment of tuberculosis of the female organs of generation and cancer. Let us continue to be faithful and sincere in our efforts, and proper reward will come. There is work for all.

Though the number of our special societies is large, yet in

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visiting them one is impressed with the uniformly good attendance and splendid work accomplished.

To the busy, hard-working practitioner the departments represented by our Association at its meetings are as valuable as an attendance upon postgraduate work. We become earnest advisers and consultants one to another. I am sure that the founders of this Association have presented an example of patient investigation of pathological subjects and in doing that which was necessary to relieve distress and illness, which can be safely carried out and made yet more perfect by those who are to follow.

Of the forty-three papers presented at this meeting, twelve apply to what we now understand as being classed with abdominal surgery and the work that is done very largely by the general surgeon, but which also applies to the gynecologist in many operative fields or surgical territory. By that I mean there are in certain localities gynecologists who feel it incumbent upon them to do this work, whenever it is essential to perform that which comes under their line of observation.

There are twenty-three papers that clearly belong to the field of gynecology, while seven relate especially to obstetrical work, one paper being unclassified. I have not gone over the list of other years, but have an impression that we have adhered very closely to the intent of our original line of work, and that to the younger men who are to follow us there is yet much for them to do. From their earnest investigations and writings much good will inure to the profession as a whole.

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RECENT ADVANCES IN THE TECHNIC OF THE RADICAL ABDOMINAL OPERATION FOR CANCER OF THE UTERUS.

BY

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FOR a number of years I have been impressed by the poor results which have been and are being obtained in this country from operations for the relief of uterine cancer and, on the other hand, by the better results obtained by continental operators with the more radical abdominal operations for the cure of this disease. It was this impression which led me to compile a statistical study of the results obtained from the radical abdominal operation, and to contrast them with the results from other operations. This was done in order to determine definitely what particular operation gave the best results for uterine cancer. For this statistical study, 2765 radical abdominal operations were collected from the literature and from personal communication with operators in this country, the report of this study being made before the gynecological section of the American Medical Association at its meeting in St. Louis, June, 1910.(1)

In the above report it was shown that, as far as it can be determined at the present time, the average operability of all cases observed is 65.17 per cent. by the radical abdominal operation; that the average general primary mortality is 19.94 per cent.; that the permanent cures five years after operation in the hands of five different operators were 40.72 per cent., while the absolute cure of all cases observed during a period of from two to six and a half years after operation in the hands of five operators was 21.14 per cent. It was also shown in my statistical study that although there is an apparent high primary mortality with this operation, that this mortality rate is more than offset by the high percentage of operability which this operation possesses; that a greater familiarity with the method not only reduces the operative mortality but increases one's own operability as well, and lastly that in the hands of individual operators the mortality

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rate has been decreased far below the general average (Doderline, 14.3 per cent.; Jacobs, 6.37 per cent.; Klein, 12.8 per cent.; Zweifel, 10.8 per cent.; Wertheim, 10 per cent. Ruben Peterson in a series of twenty-two cases, 4.5 per cent.).

From these facts it is at once clear that the radical operation in spite of its apparently higher primary mortality has a greater percentage of cures to its credit than has any other method of operation. It is a lamentable fact that although the pioneers and originators of the operation (Ries, Clark, Werder) were American it has remained for the German gynecologists to perfect, develop, and to put the operation into general use; but in this country, with all our boasted superiority in technical surgery, it has not received the attention it deserves.

From the afore-mentioned statistical review I have become convinced that the main problems to be solved in the surgical treatment of uterine cancer lie chiefly in the further reduction of the primary mortality of the radical abdominal operation. I have compiled and give herewith the various methods of procedure for the performance of the radical abdominal operation as they are found in the literature in the hope that such a review will be of service in not only tracing the evolution of the modern operation of to-day, but as an aid in the more general adoption of the method.

1878.

The first abdominal hysterectomy for cancer of the uterus successfully performed by W. A. Freund of Breslau.

1895.

Ries(2) recommended the following operation in March, 1895.

1. In carcinoma of the portio the cancerous tissue is cut and scraped away, the bleeding surface is thoroughly cauterized and shut off from the field of operation by flaps of the vaginal wall which are sewed together over the os. In cases of cancer of the cervix or of the body where the portio is well preserved, the cavity is scraped, washed out, and packed with iodoform gauze, the os is then closed with sutures, and the vagina is packed with iodoform gauze.

2. The patient is put in Trendelenburg's position. Laparotomy. Removal of the uterus, the ovares, tubes and broad ligaments, as described by Freund in 1878, or by a slightly modified method, as used by Mackenrodt before he employed the thermocautery.

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3. Taking the bifurcation of the common iliac artery as the starting-point the peritoneum is cut open on the posterior wall of the pelvis and the glands are dug out with the surrounding connective tissue by the sole aid of the fingers.

4. The peritoneum is closed with sutures here and above the vagina if this has not been done previously. Suture of the abdominal wall.

"I have not had an operable case of cancer since I have finished my studies on this method and the twenty-six cases of operable cancer I have operated on were all operated without removal of the iliac glands. But I am very glad to acknowledge my indebtedness to Dr. Rumpf, of Berlin, who has recently done for the first time and with full success the operation invented and described by me."

Rumpf(3) on June 28, 1895, reported the following operation before the Gesellschaft f. Geburtsh. u. Gynaek. of Berlin.

The operation was made on a patient with a carcinomatous cervix. After bilateral ligation of the ovarian vessels close to the linea innominata the posterior surface of one broad ligament was divided along and somewhat below the line of the great vessels; the ligament from the seat of the ligature to the uterus was opened without cutting, and the ureter exposed for some distance. The anterior surface of the ligament was then split in the same way at the same level from without inward, so that the round ligament could be ligated separately; the same thing was done at the other side and, the anterior cuts having been joined, the peritoneum was bluntly detached from the lower part of the uterus and from the bladder. The ureters could now be held aside, the entire contents of the parametrium was detached without cutting, and the uterine arteries ligated close to their junction with the hypogastric. Portions of swollen grayish-red lymphatics were taken away on either side, also the greatly thickened ligamenta sacrouterina, and with them the entire floor of Douglas' pouch was completely extirpated so that the rectum was laid bare. The uterus was now drawn forcibly upward and, with the use of Fritsch's indicator, was separated from the vagina as low down as possible all around with the Paquelin cautery. Strips of sterilized iodoform gauze were passed into the vagina, filling up the now nearly empty pelvis, and over this gauze, by means of the flaps of peritoneum and by the union of the folds of the ligamenta lata on either side together with suture of the anterior vesical flap to the anterior

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wall of the rectum, a roof was formed completely closing the peritoneal cavity.

Clark(4) states that in April, 1895, he performed an operation whose essential steps differed from the other operation employed for cancer of the uterus: 1. The introduction of ureteral bougies; 2, ligation of upper portions of the broad ligaments, including the round ligaments and ovarian arteries, cutting them close to the pelvic walls, opening the two layers and dissecting the uterine artery out to its origin and ligating before excising any tissue; 3, the excision of a much larger portion of the vagina than usual (reported two cases).

Steps of Operation.—1. Insert bougies into the ureters under the local effects of cocaine, thus saving time and conserving the patient's vital powers for the operation.

2. Make an abdominal incision of sufficient length to insure free manual movements.

3. Ligate the upper portion of broad ligament together with the ovarian artery; divide the vesicouterine peritoneum around to the opposite side; push the bladder off, and spread the layers of the broad ligament apart, thus exposing the uterine artery.

4. Dissect the uterine artery out for 2 1/2 cm. from the uterus beyond its vaginal branch and ligate the same.

5. Dissect the ureter free in the base of the broad ligament.

6. Ligate the remainder of broad ligament close to the iliac vessels and cut it away from its pelvic attachment.

7. Carry the dissection well down below the carcinomatous area, even though the cervix alone seems to be involved.

8. Proceed on the opposite side in the same manner as on the first side.

9. Perforate the vagina with a sharp-pointed scissors, making strong traction on the uterus with a small vulsellum forceps so as to pull the vagina up and make its walls tense, then ligate in small segments (1 cm.) and cut each segment as it is tied.

10. Insert iodoformized gauze from above into raw space left by the hysterectomy; draw vesical and rectal peritoneum over this with a continuous fine silk suture.

11. Irrigate the pelvic cavity and close the abdomen without drainage.

1896.

Pryor(5). "In all cases of cervical concer where the infection has extended to the pelvic glands; in all cases of recurrence after

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hysterectomy, and in so-called inoperable cases I advocate the ligation of both internal iliac arteries as a step preliminary to any other operation. My object is to remove all the tissue I can, and what I cannot remove I want to starve.

"The abdomen is opened by a long incision in the middle line and extending from the pubes to near the umbilicus. We must have room to admit light and to work. The patient is now thrown into Trendelenburg's posture. After working the intestines into the abdomen they are kept there by several large gauze pads. The bifurcation of the aorta is now felt for and the finger runs down the right common iliac until its bifurcation is reached. The division of the common iliac is easily made out, and the examining finger is passed down the internal iliac artery for one inch. A careful search is now made for the ureter which can usually be seen as a line of fibers beneath and somewhat paler than the peritoneum. It can be made to stand up prominently by gentle pressure, for a space across the internal iliac artery, the finger crossing the ureter and constricting it, thus causing it to fill with urine. Having determined the location of the ureter, the peritoneum just at its side is pricked up and nicked with scissors. Further dissection about the artery is done with the aneurysm needle, which instrument is gently worked around the vessel from above downward, the ureter being held aside. The ligature is then drawn under the artery and tied only tight enough to occlude the vessel but not to rupture its coats. The peritoneum is now stitched over the ligature. Upon the left side the procedure is the same, only the rectum must be drawn to the right. The ovarian ateries are next tied close to the pelvic brim. What else is done will depend on the extent of the disease. If the pelvis is filled with a mass of diseased tissue I would seek to remove the uterus only for the sake of getting a drainage space.

"If the case is one of recurrence I would take away as much of the nodule as possible without entering the bladder or rectum, remove all the glands I felt enlarged, and close the belly, leaving the vagina open above. Should I find a condition of cancer with gland enlargement, I would then follow down the ureters carefully right to the bladder, remove the uterus and broad ligaments, dissecting close to the bladder, clear the space beneath the broad ligaments, and remove such of the iliac glands as I safely could. To trace the ureters down, the peritoneum must be split upon a grooved director. The peritoneum is necessarily

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removed from all the pelvic floor except where it covers the rectum.

"The opening left in the vagina should be packed with gauze loosely, so as not to exert pressure; and it will probably be useless to employ sutures in the bladder, as they will slough through. Still, experience may show that the small arteries from the external iliac will be sufficient to nourish the bladder."

1898.

Werder's operation(6) was described by himself as follows:

"The whole vaginal portion was very easily removed by a sharp spoon curet, as it was completely broken down by the disease. The remaining bleeding surface was smeared over with the thermocautery. The patient was then prepared for laparatomy. . . . . After the ovarian arteries were secured the bladder was separated, not only from the uterus, but also from the broad ligaments on either side as far as possible, so as to get the ureters out of the way. This opened up both broad ligaments, and the uterine arteries could be easily traced over to near the pelvic bones where they were tied without difficulty. An assistant having inserted two fingers into the vagina as guides, the dissection between bladder and vagina was then carried down to within about an inch of the vulva. The sacrouterine ligaments were then divided with scissors, the rectum separated from Douglas' pouch, and, with two fingers, the dissection extended down to the lower half of the vagina. The lateral walls of the vagina were then freed from their attachments. The uterus and vagina were now only held by the base of the broad ligaments, which were very firmly bound to the vaginal fornices, the separation of which formed the only really difficult part of the operation. This having been accomplished and the broad ligaments completely divided, the finger could be passed all around the uterus and vagina, and at no place had the vaginal tube been opened. The loss of blood during the whole operation was insignificant. The uterus and vagina were then pushed down into the pelvic outlet, and the bladder with its peritoneal flap drawn across the pelvic cavity and stitched over the rectum to the posterior wall of the pelvis, thereby completely shutting off the pelvis from the general peritoneal cavity and covering up all raw surfaces with peritoneum. The abdomen was closed in the usual manner.

"The operation having been done in the Trendelenburg pos-

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ture, the patient was now replaced into the ordinary lithotomy position. The uterus, which was protuding at the vulva, was seized with volsella forceps and drawn completely out of the vulvar orifice with the inverted vagina. With a finger in the rectum and a sound in the bladder, as safeguards against injuring these organs, the inverted vagina was amputated with the thermocautery. An inspection of the pelvis showed a large raw cavity lined in front and above by the bladder, behind by the rectum, about four inches of which were completely exposed, and below by a very short vagina. The cavity was lightly packed with gause and the patient returned to bed. Duration of operation, two hours."

"Jacobs(7) reported the following operation: if there is much discharge from the cervix he cauterizes it just before operation. Trendelenburg's position; laparotomy; median incision down to pubis. Uterus and adnexæ are freed.

In this article he words his description somewhat differently from the one in his subsequent paper in 1908. Here he makes a transverse incision through the cervix and removes the uterus and adnexæ before he seeks the lymphatic glands in the cellular tissue and along the vessels for removal. This done, he carries out the last step in the total extirpation. He introduces one branch of a pair of scissors into the cervical canal and incises the canal directly from above downard down to the vagina, introduces the finger to guide. The cervix is then carefully freed from its attachments and removed. The vaginal walls are united by suture, the new vaginal vault covered by peritoneum from the lateral layers. A third suture (seroserous) covers the base of the bladder.

Ries(8) gives again his method with some slight changes which he has used in three cases.

First, a preliminary through curetment and cauterization of the carcinomatous surface is made under anesthesia the day before the main operation; this anesthesia is utilized for a careful search for enlarged pelvic glands palpable through the vagina, the abdominal walls, or the rectum.

In the beginning of the main operation the carcinomatous surface is shut off from the field of operation by a suture of the vaginal portion if the cancer is inside the cervix, or by a vaginal cuff closed over the vaginal portion if the cancer is located on the portio vaginalis. Fresh instruments, towels, sponges, and the like are to be used for the rest of the operation. Pa-

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tient is placed in a steep Trendelenburg position, and an incision from pubis to umbilicus is made; then follows palpation and inspection of pelvic organs and the large blood-vessels from the aorta down to Poupart's ligament and to the uterine artery. If enlarged and immovable glands are found it is advisable to cut the operation short and to do only such palliative work as will afford as little danger to the patient's life and as much protection against hemorrhage, discharge, and pain as possible. If no such enlarged glands are present Ries proceeds as follows: First the right infundibulopelvic ligament is ligated close to the pelvic wall, a clamb covers the broad ligament between ligature and uterus, and the ligament is cut through between ligature and clamp. The peritoneum is incised along the common iliac vessels and the vessels are further exposed by blunt or sharp dissection. Pushing the peritoneum back toward the side, one soon reaches the ureter which crossed the common iliac vessels on or near their bifurcation. The ureter is then laid bare from the brim of the pelvis down to its point of entrance into the bladder by the aid of an incision through peritoneum of the vesicouterine pouch. The blood-vessels cut during this procedure are ligated or temporarily provided for with clamps. The uterine artery is plainly seen in this dissection at a point where it crosses the ureter and can easily be ligated at its starting-point.

Then follows the removal of the lymphatics with their surrounding fat and connective tissue as cited in his first paper, either by blunt or sharp dissection. The area which is cleaned out in this way extends over a surface limited by the lateral edge of the external iliac vessels superiorly, the pelvic wall laterally, the bladder anteriorly, the pelvic floor inferiorly, and posteriorly by the mesorectum which, however, is lifted up and freed from all accessible glands. Bleeding vessels are ligated or when the hemorrhage comes from the side of the uterus it is checked by clamps or simply by pulling hard on the uterus. All existing adhesions are cut as close to the rectum as possible. The right side being finished the left is then taken up in the same manner, special care being exercised to empty the mesorectum as completely as possible without injuring too many of the hemorrhoidal vessels. The ureter and uterine artery are treated in the same way and the removal of fat and connective tissue with the lymphatics is performed to the same extent as on the other side. Again the peritoneum is

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left open, hemorrhage stopped by ligation of the blood-vessels. The round ligaments are severed close to the anterior abdominal wall.

The peritoneum of the culdesac is now incised close to the rectum and the vagina is perforated here, either against the finger of an assistant or against gauze introduced into the vagina. The vagina is severed after its walls have been secured by ligatures. The uterus is freed all around in this way and removed

"We now," to quote his words, "have to deal with a wound which can be closed toward the peritoneal cavity by suturing the peritoneal edges left in removing the broad ligaments and the uterus. This suture runs across the bottom of the pelvis in a transverse direction uniting laterally the edges of the peritoneum of the vesicouterine and rectouterine pouches and in the median line the peritoneum of bladder and rectum. Before this stage of the operation is finished the space between peritoneum and cut edges of the vagina is filled with iodoform gauze if there be any oozing or, if everything is perfectly dry, the cut edges of the vagina and peritoneum can be united so that the vagina and peritoneum are both closed and no dead space is left between them. Closure of the abdominal wound now follows. The patients receive the same after-treatment as other laparotomy patients and may get up as early as any of them."

1900.

Wertheim reported his special technic (see below his description of the operation in 1907).

Jacobs,(9) after opening the abdominal cavity and pressing back the intestines with the patient in the elevated position, raises up the uterus as high as is possible with his hands (fingers); Museux's forceps may wound the friable uterus so he does not use them. An incision is made which opens the broad ligament; handing the uteroadnexal mass to an assistant he searches for cancerous glands and tissues, dissects everything found disease next he places a small Pean's forceps on the uterine artery very near its emergence from the iliac artery. This enabled him to remove the artery, the veins, lymphatics, and glands; it also enables him to avoid a lesion on the ureter. The foregoing having been done on both sides, he removes the uterus by transverse section of the cervix above internal orifice. For the sake

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of prudence he immediately introduces the thermocautery into the cavity of the cervix. He grasps the neck above with Museux's forceps and frees it from the bladder as low as possible. With the aid of the fingers he rapidly ascertains the exact situation of the vaginal portion of the uterus. The vagina is transversely divided low down. The cervix is removed and a tampon is placed into the vagina at once and the canal closed with sutures. Two silk ligatures are placed around the ovarian and uterine ligaments and a third one around the round ligament, and finally the broad ligaments are closed by a catgut suture, all the ligatures emerging under the peritoneum. He rarely uses vaginal drainage. If for any reason he suspects postoperative infection he places a subperitoneal drain for twenty-four hours, using a strip of gauze per vaginam.

Before the operation he douches the vagina and cervix for several days and packs it with formalin tampons. A formalin tampon is applied to the cervix just before the operation; after removal of the neck the pack is carried nearer the vulva.

1901.

Mackenrodt(10) states that for years he has combined the vaginal with the abdominal operation by making a lateral longitudinal incision along the margin of the rectus down to the peritoneum, then pushing the unopened peritoneum away from the lateral pelvic wall he removed the ureter attached to the peritoneum and implanted it into the bladder. For the removal of the glands he made the incision on both sides of the rectus muscle margins, pushed back the unopened peritoneum from the pelvic wall and exposed the lateral pelvic cavity, thus making the glands accessible, removed them, took care of the ureter (Ureter versorgt), removed the "Bandapparat" from the pelvic fascia and isolated it, and when the operation had been completed on both sides he completed the extirpation by igniextirpation per vaginam.

He abandoned this method and tried to extirpate the uterus from above retroperitoneally through one of the incisions in the rectus margin by way of one of the two lateral pelvic cavities. After the ligamentous apparatus had been freed on both sides he split the peritoneum of one lateral cavity, pulled out the uterus, freed it from its attachments and removed it. As the ureter was either injured or showed impairment during convalescence he proceeded a step further. He attempted a median incision,

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opened the abdomen in the linea alba, pushed the peritoneum of the anterior abdominal wall back unopened; it was then opened transversely and sutured behind the extracted uterus to the posterior pelvic wall, thus the abdominal cavity was immediately closed again at the beginning of operation. The extirpation of the uterus from the posterior and lateral ligaments was effected, care being taken to preserve the ureters intact. But when he attempted to remove the pelvic glands he found this most difficult, in fact impossible. He attempted this operation only once.

At the next operation he changed his *modus operandi* again. Used bilateral incisions along the margins of the recti and combined them with a "suprasymphyseal" transverse incision. This gave a horseshoe-shaped opening. As soon as the recti muscles above the symphysis had been divided the hand was pushed into the wound, the unopened peritoneum was dissected from the tongue-shaped abdominal flaps; in the peritoneum, as the bladder was divided transversely, the uterus lifted out and separated from the peritoneal ligamentous apparatus; the peritoneum now freed from the anterior abdominal wall was sutured to the posterior pelvic wall from one side across the flexure to the other side, so that the abdominal cavity was again completely closed, while beneath or below this closure the smaller pelvis with uterus, bladder, and rectum lay exposed. The uterus was now drawn out and found adhering by its ligamentous attachments to the vagina, bladder, and rectum. He then pushed the peritoneum away from the lateral pelvic wall, removed the glands retroperitoneally down to the bifurcation of the aorta. The uterus was removed, the wound drained and filled with iodoform gauze; closure with button sutures.

Mackenrodt operated in this manner on five patients: four died from septic infection in spite of all of these precautions, although the carcinoma did not come in contact with the wound during the operation as the vagina was clamped with large angular clamps. The infection came from the vagina and from the greatly exposed rectum.

After these attempts he made the operation again in a simliar way, but proceeded differently in the care of the wound. He pulled down the bladder, and as soon as the uterus and vagina had been removed he immediately sutured the peritoneum of the bladder to the stump of the sacrouterine ligaments, so that the bladder was tense like a roof over the vaginal cavity and

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over the exposed rectum. This space received a special drainage to the vagina just before the final suture. The two lateral cavities were closed by suture of a peritoneal fold to the margin of the abdominal wall wound. These closed cavities received a drainage hole through the abdominal wall and were drained by a tube with gauze wick. Finally the space over the bladder was drained over the symphysis through the abdominal wall.

Six cases operated on in this way recovered. One case died as the result of injury to the hypogastric artery, the ligature having become loosened.

In speaking of preliminary preparation for operation he states: The vagina is washed with formalin solution, cureted, tamponed, and the tampon renewed a second time; immediately before operation it is taken out and a fresh sublimate tampon placed in. During the operation the vagina is clamped with angular clamps before the amputation and then divided with the cautery. He recommends that the ureters be freed only at the points where they pass through the ligaments—no farther; in other respects he treats them with the same care as he does in his previously described method.

Amann(11) performed his method of extraperitoneal operation for the first time April 18, 1899. The patient is prepared for several days in advance by a thorough disinfection of vagina and cauterization of the carcinoma; the vagina is packed with iodoform gauze. The patient is placed in a steep pelvic elevated position, a median incision is made down to the symphysis, and at right angles to this an incision is made down over the horizontal branch of the pubis about 10 cm. to the left, eventually only one transverse incision over the symphysis may be made. These incisions divide the abdominal wall down to the peritoneum and sever the left rectus muscle from the pelvis.

Dull dissection from the cavum Retzii into the paravesical and paravaginal spaces without tearing the easily separated peritoneum. A round cord will be dissected but in the left inguinal region. The ligamentum rotundum, this is doubly ligated and divided. By progressive advancement in the paravaginal tissue one arrives at the left ureter; this is exposed by the aid of two tissue forceps and at the same time exposing the uterine artery which rests over it. The latter is ligated as far outward from the ureter as is possible; this permits the ureter to be shelled out of the carcinomatous infiltrated parametrium. The bladder is severed from the anterior part of the uterus and

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vagina. Until now the peritoneal cavity has remained closed. Now the peritoneum is loosed from the posterior bladder wall and is opened with scissors for about 3 to 4 c.c. immediately in front of the excavatio vesicouterina. The fundus uteri with the adnexa are drawn through the slit by a bullet forceps and the infundibulopelvic ligament on both sides ligated and divided. The bladder peritoneum now lying behind the body of the uterus is immediately united by continuous catgut sutures with the peritoneum of the posterior pelvic wall, so that the peritoneal cavity is completely closed. By holding the left ureter to one side with a spatula or thread loop the left parametrium may be removed as extensively as is required, the sacrouterine ligaments are removed with scissors or thermocautery; the uterus is now grasped and by freeing the right ureter from the broad ligament the latter is also removed. The posterior pelvic wall is palpated and all infiltrated glands are readily removed. Iodoform gauze is conducted through the angles of the wound and through the vagina.

1902.

Amann(12) believes his extraperitoneal principle of operation to be especially efficient when extensive removal of the glandular and connective tissue is contemplated. The fact that Mackenrodt simultaneously conceived the same idea speaks in its favor.

More recently he has effected the following modifications: In order to compromise the bladder blood supply as little as possible he has dissected free the vesical artery and protected it as much as possible during the operation, although it delayed the course of the operation somewhat. Following the ureter to the bladder and ligating all the tissue over the ureter includes the vesical artery, hence the subsequent disturbances of cystitis so often encountered. He always completely exposes the ureters, but finally again covers them with sufficient tissue. He emphasizes this—cover of the ureters. The bladder, entirely free from the anterior pelvic wall and its peritoneum, is then sutured to the rest of the anterior vaginal wall by folding backward the posterior bladder wall (nach hinten geschlagen), and it thus comes to lie over the vaginal opening on the anterior rectal wall. Prior to this the ureters are placed laterally along the rectal wall and in addition covered with the everted bladder peritoneum. The lateral parts of the bladder are sutured around the ureters to the outside of the rectal wall. Thus the two ureters are closely

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approximated and with the rectum are completely encircled by the bladder. The two upper tips of the vesical peritoneum are sutured laterally to the exposed musculi ileopsoas.

Drainage.—Care should be exercised to insure that no drainage material is in contact with the ureters; drainage should be extensive. He has abandoned the main drainage through the vagina. Places very little iodoform gauze in vagina. From above he drains the upper lateral pelvic cavities with iodoform gauze through the lateral wound angles. The main drainage he carries out with a glass or rubber drain placed laterally along the sides of the vagina through to the vulva in the vicinity of the right and left labium majus. The wound cavity diminishes much more rapidly in size with this method than with any other. The drain is placed in the following manner: after the removal or cleaning out of the pelvic cavity the tissue to the right and to the left of the vagina is separated with the finger until the latter protrudes at the skin of the labia majora; at the point where the fingers project a "Kornzange" or placental forceps is pushed forward and an incision made over the spot from without. The drainage-tube is then introduced from above and with it a small amount of iodoform gauze. The drainage-tubes remain for a long time and must be kept apart from the ureters; through the tubes he frequently, when necessary, irrigates the cavity with physiological salt solution, later with alcohol.

1903.

Mackenrodt(13) again describes his operation as in his previous article, and states that since the introduction of Mikulicz's drainage he has operated successfully on all of the most complicated cases which have progressed to the limit; only one died, this was due to heart failure.

1904.

Jonnesco(15) disinfects the vagina two or three days prior to the operation by using abundant douches of permanganate of potash and oxygenated water twice a day and tamponing with iodoform gauze after each irrigation. Just before operation the vagina is again cleansed and a loose tampon inserted so as not to cause distention of vaginal walls. The patient is placed in the pelvic elevated position; laparotomy; median incision from pubis to umbilicus. Removes the white line entirely. The peritoneum is opened and the previously prepared strips of

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gauze are inserted. Then follow isolation of the adnexa, section of the infundibulopelvic and round ligaments between ligatures, section of the broad ligaments. Ligature of the hypogastric arteries, decollement of the bladder, dissection of the ureters, freeing and division of the uterine arteries between ligatures. Incision of the Douglas pouch, section of the utero-rectosacral ligaments, decollement uterovaginorectal. Amputation of the vagina. Then follows iliolumbopelvic cleaning. Dissection and extirpation of the cellular tissues of the pelvis; also of the iliac and lumbar fossæ together with all the vessels and lymphatic glands which they contain.

After completing the lumboiliopelvic "evidement" he removes the forceps which close the vaginal canal and introduces into the pelvis two meshes of sterilized gauze per vaginum. Actually places the ureters over the gauze "je place actuellement les ureters sous les meches." Then follows peritonization. Closure of the pelvis by the pelvic mesocolon and suture of the free border of the mesocolon to the iliac and vesical peritoneum. Abdominal wound closed. Forty-eight hours after the operation the pelvic gauze is removed and replaced by a small mesh which passes into the vaginal canal and which favors the rapid closure of the pelvis by cicatrization of the vaginal orifice. Vaginopelvic irrigations are only made when absolutely necessary. It is first ascertained that the peritoneal dome has healed before irrigations are employed, then sterilized artificial serum is used. He performs the operation in an hour and a half at the most, even in the most complicated cases.

1905.

Koblanck(16) discusses the technic as to the care of the ureters in the abdominal operations for cancer of the uterus. He states that Jonnesco isolates the ureters and later covers them with peritoneum. Mackenrodt and Doederlein carefully dissect away the cancerous tissue from the ureteral sheath and leave the ureter to remain upon its substrata as much as possible. Wertheim pursues a similar technic while Kroenig and Franz dispense with the difficult preparation of the ureter. They resect both ureters and the bladder in to those cases where the cancerous process has invaded the urinary apparatus. Nephrectomy is very seldom done, only when an implantation into the bladder is impossible.

Polosson(17) states that he has carried out the following technic since November, 1904: The cauterization of the cancer

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is done as a preparatory measure by an assistant and on same day as the main operation. In cases of cancer of the body of the uterus he simply makes a hermetic suture of cervix with silk. Very steep Trendelenburg position; large median incision extending one or two inches above the umbilicus. A compress of gauze is sutured to the wound margins so as to avoid all contact with the skin. Whenever possible the peritoneum is attached to the abdominal compress by forceps. For the purpose of raising the uterus up he employs a two-prong forceps and with this he grasps the uterus near the corona, seizing at the same time portions of the broad ligaments. Gauze packs hold back the intestines from the operative field. Ligature of the infundibulopelvic and round ligaments by division of same between two clamps which are replaced by ligatures of catgut. The ligatures are placed as far away from the uterus as is possible. Division of the peritoneum between the infundibulopelvic and corresponding round ligament. Dissection of bladder. After freeing it for 2 to 3 cm. the refolding of the peritoneum on the right and left side of the uterus is done. The uterine artery and veins are divided between two forceps. Now comes the search for the ureter near its vesical end on the posterior aspect of the broad ligament. In pursuing the vesical dissection he comes upon the mouths of the ureters by progressing in the median line, he follows the ureter throughout its entire pelvic course. If the ureter is intimately connected with the neoplastic tissue a partial resection may be necessary after which he established a ureterocystoanastomosis, as an incomplete extirpation leads to a recurrence. It is well to pursue the dissection of the bladder 3 to 4 cm. beyond the extent of the cancerous tissue. Having dissected out the ureters he extends the lateral wound close to the pelvic wall. This is done either with the finger or scissors "ciseaux mousses." With the finger he removes the cellular tissue of the broad ligament beyond the neoplastic indurations, but leaves at the side of the pelvis a certain amount of connective or fatty tissue. Lately he removes all the cellular tissue of the broad ligament down to the bladder, and even denudes down to the upper aspect of the levator ani and vaginal wall.

If one proceeds in this manner all of the parametrium is removd *en masse* without tearing and without coming in contact with the uterus and vagina. Laterally and in front the dissection may be carried to the obturator fossa. The posterior fold of the broad ligament has not been touched. Now follows the section

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of the posterior fold down to the uterosacral ligaments which are divided near the pelvic wall. The broad and uterosacral ligaments are thus removed with the uterus. The rectum is now dissected from the vagina. Section of the uterosacral ligaments facilitates the removal posteriorly of large masses of cellulofatty tissue which are frequently found to contain cancerous glands and lymphatics. If the neoplastic mass invades the rectal wall, the latter is divided above and closed by suture. "Pinces coudees" are then placed on the vagina as low as is possible so as to close the canal. Two clamps may be applied and the section made between them. An aid or assistant irrigates the portion of the vagina subjacent to the clamps, and a tampon is inserted. In cases where the cervical cancer extends very low it may not be possible to apply the clamps; in that case he opens the vagina as low as is possible.

He then searches for and removes more glands. One can with these incisions explore the external iliac vessels down to the origin of the hypogastric. Hemostasis wherever needed; gauze is then placed in the upper vagina and extended to the right and left to the lowest level of the parametric cavity. The peritoneum is sutured from before backward. In some cases the anterior peritoneum is sutured to the anterior aspect of the rectum. The operation is terminated without any abdominal drainage.

1906.

Latzko(18) states that during the past year he has developed a method of abdominal extirpation of the uterus as follows: After a thorough preparation of the carcinoma median laparotomy is made, and the general abdominal cavity is walled off by sunken compresses; then follows the ligation of the ligamentum infundibulopelvicum. The parietal peritoneum is then split downward along the external iliac artery. Ligature of the ligamentum rotundum which is drawn from the inguinal canal. Blunt dissection is made of the connective tissue of the common iliac artery from its beginning to its opening under Poupart's ligament. The iliac, hypogastric, and deep inguinal glands with their associated lymphatic channels are thus freed from their attachments so as to remain adherent to the uterus by the lymph vessels running along the uterine artery. Frequently the obturator nerve must he dissected free by blunt dissection from the glandular connective tissue of this vascular triangle.

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The ileopsoas muscle, the large vessels, the horizontal pubic ramus, and the obturator fascia are now exposed. Ligation of the uterine artery at its root without regard to the inferior vesical artery. The same steps are made on the opposite side. Then follows removal or dissection of the bladder to below the ligamentum interuretericum with freeing of the ureters from their attachments to the parametrium, care being exercised so as to preserve the ureteral sheath. After freeing the rectum then follows the removal of the sacral glands which remain attached to the ligamentum sacrouterinum; these with the parametrium and the parakolpion are then separated into isolated vascular pedicles and are ligated and divided close to the pelvic wall.

The inner genitalia now hang from the vaginal tube. The small pelvis may be surveyed down to the incisura ischiadica; the levator ani lies exposed. Drainage is provided through the labia majora, after the method of Amann. The large pelvic wound, freed of its peritoneum, is covered with two gauze strips. The vagina is now pierced at its deepest point by an aneurysm needle and ligated on both sides. Curved clamps are applied to the vagina toward the cancer after which follows the division of the vagina between the clamps and the ligatures. The two gauze strips are drawn through the inferior angle of the abdominal wound, then closure of the abdominal wound is made. Latzko operated in this manner on ten cases without primary mortality.

Stoeckel(20) described Bumm's operation (see description by Bumm in 1907). Veit(19), after trying various methods, states that he now prepares his patients for the radical abdominal operation by cureting the carcinoma on the evening before the day of operation and covering it with strip of gauze which has been dipped in a 4 per cent. formol solution. This gauze is removed immediately before the operation and the vagina is rubbed with alcohol, then sublimate, and all secretion wiped off. Ten to 20 cm. of Merck-Menzer antistreptococcic serum are injected a few hours before the operation. In some cases the same amount or even a double dose is given after the operation.

He has used stovain spinal anesthesia for this operation since July, 1905, with good results. He now employs Bumm's method of ligating the internal spermatic artery with a transverse lateral division of the peritoneum outward. He occasionally ligated the trunk of the internal iliac artery, at least on one side. Bumm's

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method simplifies access for ligation of uterine or internal iliac artery. It also shortens the time of the operation.

1907.

Wertheim.(22) "The technic of the Wertheim operation is as follows: after a careful preliminary treatment of the cancer per vaginam, by scraping and burning it with Paquelin's cautery and after a thorough disinfection, the patient is placed in Trendelenburg's position and the abdominal cavity opened by a median longitudinal incision between the symphysis pubis and umbilicus.

"1. By dividing the posterior layer of the broad ligament the ureters which appear through the peritoneum are exposed up to their entrance into the parametrium. It is necessary to avoid isolating them all around, and their surrounding vascular net work must be spared as much as possible (Fickel, Sampson).

"2. After dividing the peritoneum the bladder must be separated from the uterus.

"3. Then follows the ligation and division of the infundibulopelvic, the broad and round ligaments. The order in which these first three steps follow one another may be varied.

"4. The next step is the ligation and division of the uterine vessels with the surrounding cellular tissue. For this purpose the following manipulation serves: the index-finger of one hand is pushed along the ureter through the parametrium toward the bladder until the tip of the finger appears there; the vessels are then raised on the finger which covers the ureter, so that the ligation and division of the vessels can take place without injury to the ureter. The bleeding from the uterine ends of the vessels is stopped by clamps or ligatures.

"5. As soon as the uterine vessels are divided the vesical portion of the ureters has become easily accessible and the preparation of the ureters can be readily completed. In simpler cases the vesical end of the ureter separates without any difficulty, partly by using the blunt end of finger, partly with a few strokes of the scissors up to its ending in the bladder, and the bladder itself is separated in its deeper part from the tumor and the vagina. If the ureter is fixed, the advantage of the abdominal route is most apparent, as by careful preparation one can separate even firmly fixed ureters from the tumor without any danger to them.

"6. Next follows the separation of the rectum from the vagina.

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The isolation of the carcinomatous organ has now been sufficiently effected, and its removal follows.

"7. For this purpose the parametrium is divided as closely as possible to the pelvic wall and

"8. The vagina is cut across. The seventh step can be carried out without any loss of blood by applying to the parametrium, before dividing it, four or five bent clamps on each side, which can be replaced later by ligatures. Before the eighth step is begun the vagina is cleaned out again by dry-wiping with sterile gauze. To avoid infection from the cancer strong clamps are applied to the vagina before its division, so as to isolate the cancer from the vagina which is divided below these clamps. Bleeding from the paravaginal tissue is stopped by stitching round the vaginal stump. The division of the vagina after the preceding application of such clamps is preferable to the procedure at first adopted—namely, extracting the uterus through the vagina, having first loosened it all around—on account of the more effectual control of bleeding by the former method.

"9. For the purpose of extirpating the lymphatic glands in the neighborhood it is necessary to prolong the incision of the peritoneum upward. The great iliac vessels are, as a rule, already bare; if not, a blunt division of the cellular tissue with the finger suffices. Every lymphatic gland at all enlarged in the region of these vessels, up to where the aorta divides and downward as far as the obturator foramen, must be extirpated. Careful checking of bleeding must be undertaken also.

"10. The wound must be treated as follows: The cavity created by the removal of the tumor is filled in loosely with iodoform gauze which extends to the vulva. An exact closing of the peritoneal cavity over this gauze drainage is effected by the sewing up of the anterior and the posterior flaps of the peritoneum. The final step is suture of the abdominal incision in layers."

Bumm(23), after trying various methods of preparing a patient for the abdominal radical operation, has finally adopted an entire circumcision of the vagina at the junction of the middle and lower thirds with the removal of the upper portion in the shape of a bag; this is then sutured over a tampon pressed into the cancer cavity. He makes thorough disinfection of the lower vaginal stump and avoids all preparatory treatment that might weaken the patient, such as streptococcus infection and the like. Pelvic elevation is made with median incision dividing

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the abdominal walls from the navel down to the symphysis. In order to separate the bowels from the field of operation he employs 3-meter strips as wide as one's hand and folded several times. To avoid frequent change of hands and to insure rapid progress of the operation he first exposes the uterus on the left and then on the right side down to the base of the ligamentum lata to the opening of the ureters into the bladder, freeing them completely from the vagina; after the division of the serosa of the Douglas pouch the rectum is pushed off, and the vagina perforated beneath its sutured point. The uterus with its adnexæ is then lifted up so that the lateral portions of the ligamentum lata become "taut" and visible down to their insertion into the pelvic wall. These are now radically extirpated.

The extirpation is now begun by a double clamping of the left ovarian vessels laterally to the ovary. Next he splits the peritoneum beginning at the base of the spermatic vessels and making a lateral curved incision anteriorly over the ligamentum rotundum to the middle of the vesicouterine excavation. The lateral end of the round ligament is tied.

By drawing the wound margins of the peritoneum apart one gains a view of the two folds of the broad ligament and in less fat persons there the entire field will be exposed showing the deeper pelvic vessels without the loss of a drop of blood. One sees now the division of the common iliac artery and in this triangle lies a package of glands which extending along the external iliac vein, covering it as far as Poupart's ligament. A few strokes with the tissue forceps suffice to remove the glands with their surrounding fatty tissue from the vessels. This exposes the ext. iliac vein down to Poupart's ligament and also the hypogastric artery to its point of origin from the common trunk of the uterine artery. The uterine vessels running transversely to the latter are then isolated, grasped and ligated. He recommends that the arteria vesical superioris be preserved.

In fat persons the separation of the folds of the broad ligaments shows at first only large masses of fat which will have to be dissected by blunt dissection before the vessels may be reached. Exposure of the ureter without resection of the latter where it is surrounded by carcinomatous masses; resection is frought with too great danger from infection. Having dissected the ureter out down to the base of the bladder, the uterus is held over to that side and the operation continued on the opposite side in the same manner.

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The bladder is pushed loose down to the vaginal point where the vaginal tube had been divided and the preparatory dressing applied. With the uterus drawn symphyseally its posterior wall is made accessible, the peritoneum is then divided transversely over the origin of the folds of Douglas, the peritoneum pushed away until the division of the posterior vaginal wall is reached. Thorough removal of the ligamentum lata. The base of the ligmentæ and the uterus are freed, the diseased side is lifted out, the ureter held to one side and the tumor dissected out by blunt dissection. Bumm has frequently dissected down to the levator ani and to the nerve cords of the ischiadic plexus posteriorly.

After removal of the carcinomatous uterus the stump of the vagina is sutured and a search for bleeding vessels or glands is made. All bleeding points are clamped and ligated. Splitting of the serosa permits an inspection beyond the promontory to the upper parts of the common iliac artery and along the inguinal ring. When a marked contamination with germs is assumed irrigating of the entire wound cavity with 6 to 10 liters of salt solution. The results have been very satisfactory and in some cases striking. Transverse continuous catgut suture unites the wound margins of the serosa of the pelvis. Closure of abdominal wall is followed by loose tampon of vagina with gauze.

Doederlin and Kroenig (24) use the following technic. The vagina is douched with sublimate and sublimate alcohol solutions and tamponed with iodoform gauze to catch all secretions during the operation. The authors do not make any preparation of the carcinoma itself, being of the opinion that such preparation by the curet and cautery disseminates not only the carcinoma cells, but the pathogenic and highly virulent bacteria usually present in the degenerated carcinomatous masses. They think that the technic of Wertheim makes such preliminary preparation unnecessary.

The patient is placed in an extreme Trendelenburg position, the self-retaining abdominal retractor of Doyen or Fritsch being applied. Exploration of the abdomen, with palpation of the uterus, parametria, bladder, lateral pelvic walls, spinal column alongside of great vessels, is then made for lymph gland metastasis. This is done to determine the operability of the case; the uterus is now grasped with a Kustner tumor forceps which does not injure the uterus. The uterus is pulled

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first forward and upward. The extirpation is begun after the method of Bumm, ligation of the spermatic vessels, incision through the peritoneum, downward and forward, paralleling the round ligaments, separating the two layers of the broad ligament by blunt dissection; the large vessels, ureter, and any enlarged lymph glands will now be seen. Bumm's procedure greatly simplifies the operation and has the additional advantage of being bloodless. Next comes removal of the lymph glands, ligation of the arteries outside of the ureter, and dissection of the ureter. The operation now continues "a la Wertheim," the peritoneum is separated from the bladder and rectum, and the separation is carried downward to the middle of the vagina; if the bladder is involved a resection of the affected portion of the bladder wall is made, and both sacrouterine ligaments are severed. The uterus now hangs free—only by the vagina. The gauze is now removed from the vagina which is again cleansed by sponging, the right-angled Wertheim clamps applied, and the vagina cut across. The authors use Shoemaker's ligature forceps for applying deep ligatures in the pelvis.

The closure of the operation field is accomplished by uniting the rectal peritoneum to the posterior vaginal wall, the anterior or cervical peritoneum to the anterior vaginal wall, so as to obliterate dead spaces. If the operation has been extensive, drainage is carried out after the method of Amann, that is though the cavam ischiorectale, and made to emerge to the side of the labia majora. If the operation has not been so extensive, the lateral cavities are simply covered with peritoneum by a continous catgut suture. Lastly, the anterior and posterior walls of the vagina are sutured together.

Veit(25) states that he uses spinal anesthesia in this operation with better results as his experience widens. Heretofore the extension of the operation worried him less than did the anesthesia.

1908.

Amann(26) states that in order to perform the typical radical abdominal operation for cancer of the uterus the progress should be by broad separation of the peritoneum from without inward, the lymph glands with their channels should be separated from the large vessels, and then the uterus with its ligamentous attachments freed from its surroundings and removed. He is of the opinion that a little drainage corresponding to the deepest

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point in the small pelvis is indicated. The technic of pelvic drainage is closely associated with the form of ureter covering: on the one hand the cavities are to be drained, on the other the ureters are to be surrounded by the adjacent wound surfaces and supplied with nutriment. A gauze strip should by no means come in contact with a ureter, else necrosis will occur.

Six years ago he recommended that the vagina should be closed above, the bladder drawn backward and resting on the rectum, the ureters placed alongside the rectum and covered with the bladder, then the large lateral wound cavities drained paravaginally by incisions alongside the introitus vaginæ. Lately he modified the method to one that is easier and which has been successful in a large number of cases. The bladder peritoneum is sutured to the anterior vaginal wall with a continuous catgut suture; the lowermost portions of the ureters are literally wrapped into the bladder wall by several button sutures which lift up the deep posterior parts of the bladder wall and unite it with the peritoneum of the bladder. The upper portion of the ureter (free portion) now sinks deep into the wound cavity of the small pelvis. In order to elevate the ureters and at the same time fix them outwardly to the lateral pelvic wall he unites the stump of the uterine artery underneath the ureter with the slightly drawn downward lateral peritoneum, so that the ureter seems to ride on a sort of fork formed by the uterine artery and the hypogastric artery and without pressure lifts it out of the deep small pelvis, fixing it to the lateral pelvic wall. The ureter thus lies on the lateral pelvic wall aside or on the arteria vesical superior, which he always tries to save, and is completely covered by the superimposed peritoneum. Therefore it is impossible for them to come in contact with any drains in the small pelvis.

In order to drain the deep pelvic cavities effectively he grasps the posterior vaginal wall with two clamps and pushes the rectum by dull dissection away from the vaginal wall for some distance downward; then he splits the posterior vaginal wall with the cutting thermocautery between the clamps in longitudinal direction down to the niveau of the lateral wound cavities (Wundbuchten). Through this slit iodoform gauze, which has been introduced by a guiding sound from above into the vagina and carried out through the vulva, may be pushed in front of the rectum and also a little laterally.

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The lateral peritoneal slits are then closed in such a manner that the posterior peritoneal flap next to the rectum is sutured to the peritoneum which has been drawn to the uterine stump; thus, the peritoneum again rests against the lateral pelvic wall and in the depths the vaginal lumen will appear open through which the iodoform gauze, through which the longitudinal incision of the posterior vaginal wall extends somewhat posteriorly, protrudes.

This deepest portion of the small pelvis, now laterally covered with peritoneum perfectly, is now closed by suturing over it the sigmoid flexure and if this should prove insufficient also the downwardly displaced cecum, closing it completely from the other abdominal cavity. The flexure is sutured to the lateral and to the bladder peritoneum with button sutures. He states that for the past twelve years he has utilized the flexure, also cecum and bladder, in the most extensive manner for the covering of peritoneal defects in the small pelvis and has always been very successful. This method is to be employed only in the extensive cleaning out of the pelvic cavity. Has had no ureteral fistula for years when using this method. Fixation to well nourished tissue is most important for bladder and ureters and the conservation of the nourishing bloodvessels is also essential.

Seeligmann(27), in six very severe recent operations for cancer of the cervix, had occasion to modify Wertheim's operation as follows: One or two days before operation, depending largely on the condition of the patient, under morphia-scopolamin injection or under ether the cancer is cureted and the cavity packed with a tampon of vioform gauze which has been wrung out of 5 per cent. formalin solution. The entire cavity, the uterus, and vagina are packed. This gauze is removed before beginning the operation and the vagina and cavity cleansed with sublimate solution; thereupon the vagina and uterus are carefully dried and a sterilized vioform gauze bandage introduced, filling the uterus and vagina and protruding from the latter. He then disinfects the abdomen with soap, alcohol, and sublimate. After incision in the median line he covers the large abdominal cavity from the operative field by a large operating cloth or sheet, drawing it well over the margins of the abdominal wall, thus avoiding further contact with the intestines. He incises the peritoneum as Bumm does, as by so doing the two ureters are easily exposed. "Ich prapariere den Ureter nicht." He

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does not dissect the ureter but follows it along its course through the small pelvis into the bladder. He then finds the large vessels and exposes the uterine artery and vein at their communications with the trunk vessels. Both are ligated and, with the ureter, the hypogastric artery and vein are pushed outward as far as possible against the pelvic wall. An assistant now draws the uterus upward and to the left out of the abdominal cavity as far as possible and ligatures (two strong silk sutures) are placed around the tense ligamentum sacrouterina and around the base of the parametrium on the right and then on the left side as close to the pelvic wall as possible; they are then divided. Having sought for glands and removed them he tampons both pelvic cavities and has an assistant draw the uterus upward and backward causing the vagina to become tense. Dull dissection of the vagina is made from its attachments, so that the thumb and index-finger of the left hand encircle a large portion of the upper part of the vagina and compression can be made on the previously introduced vioform gauze. He then severs the vagina from right to left without previously applying any angular clamps. He now attaches fresh vioform gauze to the gauze exposed in the free or divided vaginal tube and draws it out per vaginam establishing the necessary drainage. The drain is placed on the vaginal tube which has been modified by two lateral sutures and pushed slightly against the pelvic cavities. Over this the peritoneum is sutured with continuous and button sutures from right to left. Uses no clamps and has had excellent results.

Clark(28) states that the rule he now adheres to is "to remove all tissue possible in the vicinity of the primary site of the growth, using the cautery rather than the knife. In general, the principles laid down by Wertheim's latest publication are followed, stopping short, however, with the removal of a considerable cuff of vagina with the uterus, this with as much parametrium as is possible, and not prolonging the operation by a search for glands."

Ries(29) still carries out his operation as first reported in 1895; prepares his patients by curet and cautery and insists on a most radical removal of all lymphatics and other diseased tissue.

1909.

Jacobson(30). From the foregoing review of the literature the author has adopted the following technic, the method being a combination of Bier's spinal anesthesia with Bumm's modifi-

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cation of the Wertheim technic in which the vaginal vault is left open and early postoperative *x*-ray treatment instituted. Spinal anesthesia is especially adapted for this operation. When it is employed the abdominal muscles are temporarily paralyzed and are extremely relaxed. As soon as the incision is made and the pelvis of the patient elevated the intestines gravitate away from the field of operation in a most striking manner. Thus, the parts to be operated are rendered accessible and manipulation of the small intestines is reduced to a minimum. Spinal anesthesia also materially shortens the time of operation and permits of a more accurate hemostasis, preventing in this wise to a great extent the danger of secondary hemorrhage.

To me the most important feature of spinal anesthesia is the prevention of shock by "blocking" of the cord. Thus the afferent impulses or sensations produced by the operation cannot be referred to the peripheral vasomotor centers and nerves and so produce shock. The same state of affairs prevails as it does in Crile's method of "nerve blocking" in amputations of the thigh, only it exists on a larger scale.

The operation is carried out as follows: the patient is given 1/6 gr. of morphine with 1/100 gr. of scopolamin hypodermically about half an hour before the operation. In some cases an additional dose is given about half an hour before operating. The patient sits upon the lower end of the operating-table with her arms folded and resting on her thighs, with the back and spine made convex. The entire skin of the lumbar region is then rendered aseptic and painted with tincture of iodine.

A Record syringe of 10 c.c. capacity, with the regulation Bier needles, which have heen prepared by boiling, are used for the injection. One c.c. of a 5 per cent. solution of tropacocaine in 0.6 per cent. solution is drawn into the syringe. The spinal puncture is then made by inserting the needle between the third nd fourth lumbar vertebræ, the cannula being withdrawn and about 10 or 12 c.c. of cerebrospinal fluid being allowed to flow out. The syringe is now attached to the needle, the piston withdrawn and the 1 c.c. of anesthesia solution is diluted with the cerebrospinal fluid up to about 10 c.c. The entire contents of the syringe is now slowly injected and the needle withdrawn. The puncture is sealed with col odion, and the head of the table is lowered about six inches for a few minutes.

While waiting for the anesthetic to take effect, which occurs in from three to five minutes, the patient is placed in the lithotomy

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position and the vaginal preparation is finished. The extremities and abdomen as high as the ensiform cartilage in the meantime will have become anesthetized. After rendering the vagina aseptic the carcinomatous mass is cureted away and thoroughly cauterized with the Paquelin. The uterus is then lightly packed with gauze, the patient placed in the horizontal position and the final abdominal preparation made. The head of the table is now lowered until an exaggerated Trendelenburg position is obtained. A median incision from the pubes to the umbilicus is made and the abdominal cavity opened. As the abdominal walls are relaxed and paralyzed the intestines quickly gravitate toward the diaphragm; they are then covered and held in this position by very hot gauze packs. A self-retaining abdominal retractor is now placed in position, which greatly facilitates the subsequent work. My own retractor was originally designed for this special purpose (*Surgery, Gynecology and Obstetrics*, October, 1907, pages 447, 448).

The fundus of the uterus is grasped by a double tenaculum, care being taken not to squeeze or compress the uterus with this instrument. The infundibulopelvic ligaments, including the ovarian vessels, are first ligated on either side. Bumm's incision for quickly locating the ureters is made, first on the right side, running outward and forward between the round ligament and the Fallopian tube. This incision goes through the peritoneum and the cellular tissue. The latter is separated by blunt dissection down to the ureter. As this incision crosses the ureter at right angles one can hardly avoid finding that organ immediately. The uterine vessels and any enlarged glands can be seen or felt at this stage of the operation, the glands are removed and the artery ligated. The same procedure is carried out on the left side, the Fallopian tubes and ovaries being removed with the uterus. Bumm's method of finding the ureters is much better than Wertheim's, the ureters being found more quickly and the operation is thereby shortened and shock lessened.

The peritoneum covering the bladder and uterus is next incised and the bladder pushed downward with dry gauze dissection. The uterus and its appendages now are quite free and may be pulled upward well into the incision to facilitate the next most important steps in the operation. On the right side the ureter is dissected upward as far as the bifurcation of the common iliac vessels and downward to its entrance into the

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bladder, care being taken not to disturb its posterior attachments too much. Enlarged glands are removed as they are encountered. The uterine vessels on the right side are now tied to the outer side of the ureter close to the pelvic wall. The same steps are now carried out on the left side.

As much of the cellular tissue of the pelvis as possible is removed, cutting far away from the disease. This is accomplished on both sides, cutting down to the sides of the vagina. This step is made with care, for often the diseased tissues are so friable as to cause an unintentional opening into the vagina or uterus. Great care must be exercised in keeping wide of the disease and in cutting through healthy tissue only. When the uterus hangs only by the vagina the Wertheim's right-angled clamps are applied and the vagina severed distally to the clamps. About one or two inches of the vagina are thus removed. These clamps effectually prevent contamination of the wound by the secretions of the infected carcinomatous uterus. Some bleeding is usually encountered from the vaginal arteries, but this is as a rule not troublesome if the uterine vessels have been secured.

The final steps of the operation consist in arresting of all hemorrhage, the further removal of any suspicious looking tissue, the covering of all raw surfaces with peritoneum, and the placing of three or four large rubber tubes (one-half inch) in the vaginal opening for drainage; these serve also to keep the vagina open for the subsequent Roentgen treatment. This description briefly represents the normal type of operation. It is, of course, varied to suit individual cases. Involvement of the bladder or ureter can be dealt with by the recognized standard procedures. The postoperative *x*-ray treatment is begun as early as is possible after the operation. This is commenced as early as the third day, and is carried out in a most aseptic manner by an expert Roentgenologist.

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PUERPERAL TUSSIS AND ITS TREATMENT.

BY

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THIS reflex or neurotic cough, though often referred to by the older writers, seems to have been dropped out of sight and mind by the authors of the past twenty years. Modern men have not recorded any such experience as Miguel who states in his treatise on "Convulsions in Labor" that there was an epidemic of cough in 1675 that so powerfully affected pregnant females that most of them died. Columbat speaks of the cough and says "the violent shocks which it imparts to the abdominal viscera may cause uterine hemorrhages, abortion, sudden involuntary expulsion of the urine and by its prolongation determine pulmonary inflammation or it may increase in severity after labor has terminated, unlike the other complications of pregnancy." Leishman says "it is at times so violent as to resemble whooping-cough." The disease must be rare because of the great exertion involved in the cough paroxysms, the almost constant vomiting, the profound mental depression from loss of sleep, the pain and soreness from muscular strain, the inanition and the futility of all the usual remedies would surely make a symptom picture that would be indelibly impressed on the mind of the attendant. Particularly so if it ran its common course, and a vaginal discharge appeared with a color changing from pink to brownish-red, finally becoming bloody and thus indicating a separating placenta, the cough and the vomiting meanwhile remaining stationary or even increasing in violence until abortion was completed, or possibly continuing until the delivery of the uterus by the vulvovaginal prolapsus route; yet I can find no cases reported.

Primarily, "puerperal tussis" has no lesion, but it is accompanied, finally, by traumatisms and damage to the pulmonary and respiratory tract and to various parts of the body. These

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are brought about by long continued and severe pneumatic hammering and the strain of constant coughing scarcely, if at all, less than that of whooping-cough which it resembles in many symptoms, the characteristic whoop being diagnostic by its presence or absence. I have seen umbilical hernia, inguinal hernia, prolapsus ani, prolapse of the uterus and bladder, gastroptosis, enteroptosis, and epistaxis caused by it and all these were complicated by constant vomiting of everything put into the stomach, inanition, starvation, and insomnia. The urine shows an irritated kidney, faint trace of albumin, crystals of uric acid and calcium oxalate, occasional blood globules, and few pus corpuscles. Occasional cylindroids and epithelia from convoluted tubules and pelvis of kidney and from the bladder.

In twenty-eight years I have seen three cases of puerperal tussis. The first one convinced me that the aid furnished by my library might be amply comprised in a quantity expressed by the symbol zero. Study and work and the exhibition of this, that, and the other remedy had for their result the well-grounded and fixed belief that the patient might as well have been without treatment. Cough ceased after prolapse of the already emptied uterus, and with the rectum turned inside out. The patient recovered eventually after surgical aid and much nursing. In the second case I did better because I used the bath treatment referred to by Cazeaux and others. The results in the third case were all I could ask.

The diagnosis is readily made because exclusion is easy and the trouble can only be confounded with whooping-cough. The condition may be broadly described as a neurosis, probably of toxic origin, with lesions resulting from and following the traumatisms and strainings caused by its most prominent symptom, a spasmodic cough, essentially paroxysmal in character. In treatment the first thing is to forget all opiate formulæ. Dismiss all the usual cough mixtures from your mind. Morphine and heroin in minute doses (1/100 of a grain hourly) may be adjuvants but in ordinary medicinal amounts they seem to give rise only to the complications, stercoremia and hypostatic pneumonia. The first requisite of the sufferer is usually sleep. This is secured by twenty minutes in a warm bath in which washing soda and table salt have been dissolved in equal parts. Mix a cupful each of the sodium chloride and carbonate and add gradually to the water bath, stirring it a little and, when you taste the salts distinctly, the strength of the bath will be right. Not

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only that, but taste will be a good guide for the strength of future and succeeding baths, regardless of the quantity of water employed. Mild and general rubbing of the skin while in the bath is important, but anything like vigorous massage should be avoided. The temperature of the bath should be 95° gradually raised to the normal mark on your clinical thermometer or 98.6°. The duration should be twenty minutes and later, as the patient becomes accustomed to it and gains strength, the time may be lengthened to half an hour. After the bath the patient should be dried, but not rubbed, and the towel should be used as an absorbent—a blotter—but not as a means of friction.

In short, avoid everything stimulant and adopt everything conducive to quiescent nerves. A hypnotic (for example, veronal in 5 grain doses) as an adjuvant increases the sedative effect of the bath; it quiets the vomiting and prolongs the sleep. Give a hypnotic at say 7 P. M., the bath at 7:30, and have the patient warm and in bed at 8 o'clock. The importance of definite orders to secure peace can hardly be overstated, for nothing annoys a nervous wreck (that is what my cases were) so much as stealthy movements, whisperings, and remarks to the effect that "she's asleep" or "she isn't asleep." The morning after the bath have the bowel irrigated with a quart of warm water in which is dissolved a heaping teaspoonful of Epsom salts and of table salt. Have the patient retain as much as she can of the solution, but do not insist on discomfort; make it easy for her because it is better to give three partial enemata daily and have all three comfortable than it is to give a single thorough and complete one with an exhausted and discouraged patient for its most obvious result. The magnesium sulphate may be increased to a heaping tablespoonful if a more cathartic effect is desired.

I think the best cough mixture for internal administration is the old formula: hydrarg. bichlor. gr. i, ammon. chlor. gr. x, syr. prun. virg. ℥iv, M. Sig. ℥i every four hours, if required. Alone, this and every cough mixture with which I am familiar will prove a vain hope and a poor help in time of much trouble, but it works very well with the other measures advised. It is possible that when first seen the sufferer may be too feeble to be put into the bath. In such an emergency use the cold-water poultice to the abdomen with the cold compress around the throat, and have her drink very hot water, as hot as she can

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swallow, by sipping from a teaspoon. In this way you can improve her condition sufficiently to enable her to undergo the bath without risk.

Electricity, galvanism, with the positive pole in the fossa under the left ear and the negative at the left side of the ensiform cartilage of the sternum, 5 milliamperes for ten or fifteen minutes and the same strength for thirty minutes with the positive to the forehead and the negative just below and inside of the angle of the left scapula, will act beautifully at times. It may be said of it that if it does any good it will do great good and if it does not do great good it is useless. The effect in my hands has been prompt, but if it were not quickly evident I would not persist in its use and should it make the patient nervous of course it will do harm. In other words, I believe it to be a great help, but I am not willing to go further at present. I can imagine a patient to whom it would be intolerable, though I have not seen any such person.

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MYOMA OF THE UTERUS, WITH SPECIAL REFERENCE TO DEGENERATIVE CHANGES.

BY

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ANALYSIS OF CASES.

BY

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It has always been my contention that a woman who possesses a fibroid tumor that is symptomless and discovered only by accident displays good surgical judgment if she refuses to submit to its removal. This opinion has received support from most well-considered contributions to the subject. In the admirable work on "Myomata of the Uterus" recently issued by Kelly and Cullen, the autopsy record of the Johns Hopkins Hospital have been reviewed with reference to the general frequency of myomatous tumors. It was found that of 742 women over twenty years of age, dying from general causes, myomatous growths of the uterus were present in 148 or about 20 per cent. From this and similar statistics it is apparent that the incidence of fibroids is much greater than is the incidence of troubles caused by them.

Granted that the mere presence of a demonstrable fibroid is not in itself an indication for operation, we are confronted with the task of assigning the proper indications. Leaving aside the general condition of the individual patient, which is a constant factor for consideration in all surgical procedures, our decision must be compounded of three factors—namely, the mortality from the operation itself, the urgency of the immediate symptoms, and the prognosis of the disease if unchecked by active intervention. As for the first consideration, we find that the mortality of operations in this class of cases as they now come to us is in the best hands from 1 to 3 per cent. In the hands of unskilled or occasional operators it is necessarily somewhat higher. This mortality, while not large, is sufficient to make us cautious in the

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selection of cases. In all but ultra-conservative quarters it is not sufficient to cause delay of operation in such cases as severe sudden hemorrhage or smaller hemorrhages so frequently repeated as to bring the patient into a condition of grave anemia, nor in the case of extrusion of the tumor or strangulation by twist of a pedunculated growth. Impaction of the growth in the pelvis also may cause such severe symptoms as to defy mere palliative measures, and when sepsis is implanted upon a myomatous condition of the uterus it assuredly requires the aid of operation. Other and rarer complications may make operation the wiser course, but all these are conditions which are announced to both patient and physician in unmistakable terms and our best physicians who combine boldness and prudence will not be long in arriving at a conclusion as to the need for operation, nor will they shirk their duty in advising it.

The day is past when surgical treatment must justify its plea for preference in these cases, even though there is still a disinclination among some to follow the plain indications. The cause of this disinclination is not in the case but in the man himself. I venture to predict that there will never be devised for any ill or disorder so perfect a treatment that it will receive the unqualified assent and support of the body of physicians. Indecision and minds that work on the bias will always be with us, as in every other calling or vocation. I will not, therefore, take up time in trying to convert those who deny the means of salvation, but will rather devote myself to an examination of the third factor in decision—namely, the prognosis of fibroid disease of the uterus in so far as it relates to the behavior of the tumors themselves or to pathological conditions caused by their presence. This is a most important question. To anticipate dangers before they arrive and to devise means of warding them off is to approach the ideal in medicine and surgery as well. However skilful a physician may be in the presence of actual danger, he is not exercising his highest function unless he is so armed with a knowledge of the probable developments of disease as to enable him often to steer his patients away from the rocks. This is the art of prognostics which Hippocrates never ceased to praise, calling it even God-like, probably because it represented the nearest approach to the divine knowledge of the future which could be possessed by man.

This is at the bottom of the great movements in preventive medicine and to a certain extent has been adopted in surgery.

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Thus the removal of a chronically diseased appendix is a high development of prognostics and comes from our knowledge painfully acquired of the relative risks of such a condition as compared to operation. An effort has been made to place myomatous disease of the uterus among the conditions which demand a preventive operation because of the probability of malignant degeneration of these tumors themselves or of associated tissues.

For consideration we may divide these pathological changes into: A. Degenerations of the fibroids themselves which may be either 1. nonmalignant or 2. malignant.

B. Malignant disease of the body or the cervix of the uterus associated with a fibroid condition of that organ.

My last 345 consecutive operations for myoma of the uterus have been analyzed chiefly with reference to this point. Two hundred and fifty cases immediately preceding those upon which this paper is based were made the subject chiefly of clinical analysis. As the pathological data of this series were found to be less complete than in the present series they have been disregarded, since we felt that the smaller number of cases would give the truer picture from a pathological standpoint.

Hyaline degeneration is the most frequent of the benign regressive changes affecting fibroids. It has been noted as present in a marked degree in thirty-seven cases or about 11 per cent. This does not represent the true incidence of the condition since early hyaline change was not specially noted. Practically all fibroids which attain any size will show this condition in some part of the growth. It is chiefly of pathological interest and possesses no clinical significance until it goes on to the stage of liquefaction and cyst formation. When this occurs the tumors often take on rapid increase in size and symptoms are usually augmented in proportion. The product of this melting process is a material which varies from a gelatinous consistency to a thin watery fluid. Tumors filled with the gelatinous material are often said to have undergone myxomatous degeneration, while those in which the thinning process has gone on to the production of watery fluid are termed cystic. In some series both conditions are together recorded as cyst formation. In our series we found nine instances of myxomatous change and three pronouncedly cystic, twelve in all (3.6 per cent.) This corresponds rather closely with Noble's figures in his extensive collection of 2274 cases of fibroids in which he found approxi-

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mately 2.6 per cent. of cystic changes. This condition, when it arises, demands operative treatment.

Cullen reports a case in which the tumor weighed 89 pounds and was mistaken for an ovarian cyst. It is chiefly such cases, when one is dealing with a single soft symmetrical tumor of moderate size, that are so difficult to distinguish from pregnancy. The simulation may be perfect and the distinction impossible even with the abdomen open. These changes are probably due to slowly failing nutrition of the growth. When the nutriment is more suddenly cut off the tumor undergoes necrosis. If this occurs in such a way that extravasation of blood takes place into the tissues the tumor presents a peculiar brick red color, which has caused it to be called red necrosis. If blood is not present in excess the tissue elements simply lose their definition and show the ordinary picture of coagulation necrosis.

Usually necrosis affects only a limited portion of the tumor and gives rise to no symptoms. In some cases however the growth may perish *en masse* and this is generally accompanied by more or less severe symptoms. This extensive necrosis is most apt to affect pedunculated myomas where the mchanism is usually apparent, being due to strangulation of the blood supply or infection. Occasionally, however, an intramural fibroid will undergo sudden necrosis without obvious reason. This is more apt to occur during pregnancy. Necrosis of this sort is a serious condition chiefly because of the danger of secondary infection. A necrotic fibroid which projects into the cavity of the uterus or possibly from the cervical canal always becomes infected and it is important not to mistake the foul sloughing mass for an inoperable carcinoma. Christopher Martin found necrosis occurring in fibroids in about 4 per cent. of cases considered. Noble found it in 119 cases (5 per cent.). In our series it occurred twelve times, or 3.6 per cent. It does not materially increase the danger of an operation unless it be already accompanied by infection.

In sudden necrosis of an entire tumor one finds usually definite symptoms pointing toward interference, such as pain, vomiting, rapid increase in size of the tumor, tenderness, and often some fever. When necrosis takes place in successive small areas it is followed by a deposition of calcium salts which, in turn, gives rise to the so-called calcareous degeneration. This we found eight times (2.4 per cent.). It is practically a spontaneous

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termination of the life of the tumor and is rather to be welcomed than otherwise. If we add together all noteworthy benign degenerations occurring in this series we have a total of thirty or 9.6 per cent. This is not to be interpreted to mean that approximately 10 per cent. of all fibroids will show such degenerative changes, but that among a series of cases which are considered under present standards to require operation about 10 per cent. are causing trouble largely as a result of degenerative changes which have occurred in them.

Malignant degeneration of fibroids is a matter of much greater importance if it be proved to be of frequent occurrence. The only malignant change which a fibroid itself can undergo is, of course, transformation into a sarcoma. Martin in his recent paper concludes that this occurs in approximately 4 per cen t. of all cases. He quotes statistics as follows: Winter found sarcomatous change in 4 per cent. of 500 myomas; Martin found six in 205 cases; Cullingworth, one in 100; Scharlieb, six in 100; Haultain, two in 120; Hirst, three in 189; McDowell, twenty in 1000 cases. He himself encountered nine cases in 380 abdominal sections for myoma. These collectively total about 2 per cent. of sarcomas presumably arising upon a myomatous base. He goes on to say that "probably many other cases thought to be primary sarcomata have originated in unrecognized myomata," and from this assumption justified himself in raising the true proportion to 4 per cent.

Bland-Sutton, however, has taken a directly opposite view and states that quite possibly sarcomas, which have been considered as derived from preceding myomas, have been sarcomatous from the beginning. Noble in his large tabulation found only thirty-four cases of sarcoma or about 1.5 per cent. It is not stated that these cases were all instances of sarcomatous degeneration of myomas and it is quite likely that some at least were mere associations. Kelly and Cullen found sarcomatous degenerations or association in seventeen out of 1400 cases (1.2 per cent.) In our series we found four cases, 1.2 per cent. which were diagnosticated pathologically as sarcoma. In the first case the tumor, which was a small round-celled sarcoma, gave no evidence of its being derived from a myoma. The second case was a myxosarcoma which also showed no evident connection with an antecedent myomatous condition. It seemed rather probable that such was not the case. The third case involved the ovary and it is difficult to see what possible connection the

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fibroid condition of the uterus could have had in the origin of such a different condition. In the fourth case the sarcoma was in no way connected with the uterus. Clinically there was nothing to suggest such a malignant change and the patient has remained without recurrence. In this case the patient was operated on primarily for a huge ovarian cyst and the uterus found after section to be the seat of numerous fibroid nodules. The condition had been present for years and the tissues were very atypical in appearance. Under such conditions only those who are skilled in microscopical work know how difficult it may be to set the exact boundary between a malignant and a nonmalignant change.

The personal equation of the pathologist must be taken into account in such cases. It is only thus that I can account for the high percentage of sarcomatous changes found by some authors who counsel minute microscopical examination of various parts of all the tumors present. I am aware that it is by no means impossible for such a transformation to take place, but I cannot believe that this tendency is so marked as is stated by some authors. If it were true, then sarcoma of the uterus ought to be one of the most frequent of diseases, whereas it is comparatively rare. Simply to make use of the figures already given, taking 20 per cent. as the absolute incidence of myoma of the uterus in women over twenty, if 4 per cent. be the tendency of myoma toward sarcomatous change we should find sarcoma in 4 per cent. of 20 per cent. of all women or .08 per cent., which is a *reductio ad absurdum*. I do not desire to cast discredit upon the findings of anyone, but I must point out that either the experience of those who find such marked proportions of sarcoma must be exceptional or else that there is a subtle source of error in the standards of diagnosis. I may state that for years every fibroid uterus which I have removed has been subjected to careful gross and microscopic examination in our laboratory under the charge of Dr. A. O. J. Kelly.

Another point which is urged for the preventive removal of fibroids is the increased tendency to uterine cancer found in myomatous uteri. That this is a real danger cannot be denied. The present series of cases shows eleven instances of carcinoma associated with myoma (3.1 per cent.). Of these, six (1.7 per cent.) involved the body and five (1.4 per cent.) were situated in the cervix. These figures agree very closely with Kelly and Cullen, who found in 1400 cases of myoma forty-three of associa-

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ted carcinoma (3 per cent.), of which twenty-five (1.7 per cent.) were in the body and eighteen (1.3 per cent.) in the cervix. Martin found six cases of carcinoma in 380 (1.6 per cent.), while Noble in his large collection found 2.8 per cent. of carcinoma and among his personal cases 4 per cent.

This is an alarming incidence of a desperate condition with one which is relatively innocent, and if we are able to incriminate myoma in the causation of cancer it will be a heavy stigma. The instances of cervical carcinoma can hardly be credited to the presence of myomata in the body of the uterus. Not only is it difficult to imagine any way in which a fibroid should exercise such a malign influence upon the cervical epithelium, but clinically we gain no impression that such is the case. Bearing in mind that the uterus is the most common site of carcinoma as established by the large statistics of Welch, who found that cancer of the uterus furnished 29.5 per cent. of 31,482 cases of primary cancer, we must be prepared to find it associated with such a frequent pathologic condition as myoma, which furnishes at least a tenth of all gynecologic work. This Association should cause no more remark than the simultaneous presence of car cinoma of the breast, stomach, bladder or rectum, all of which have been noted in a number of instances.

Concerning carcinoma of the fundus, the case is different. If the presence of myoma does not influence the development of malignancy in the uterine epithelium, we should expect that the ratio of cervical to corporeal cancer would remain unaltered. This ratio is estimated at from four to one (Cullen) to ten to one (Martin). My own statistics are more nearly in accord with the lower ratio, but in any case there can be no doubt that cervical cancer predominates largely over that which is primary in the body of the uterus.

Now of the cancers which are found complicating a fibroid condition of the uterus, we may see by a glance at the above figures that the preponderance is reversed and fundal cancer is found to be more frequent than that of the cervix. It seems a fair assumption and one which is also suggested by the known tendency of chronic nutritional and irritative influences to excite malignant change, that a well defined number of cases of cancer of the body are precipitated by the presence of myomata. This, to my mind, is the most serious of the degenerative processes set in motion by a fibroid tumor, since it always arises insidiously as do all cancers of the fundus. Sarcoma is no less

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insidious though less common as a derivative of myoma. Together they constitute a menace to life of no mean degree, and though the results of observation and analysis of this series of tumors do not support the pessimistic views of some gynecologists, the danger of malignant changes due to myomata is a fact which cannot be disregarded. The early operation for fibroids does not rest upon this factor alone and high statistics of degeneration are not needed to support it. "A good cause can sustain itself upon a temperate dispute."

The only point in which I would differ from those who believe in the higher percentage of malignant change, is in not advocating the removal of an accidentally discovered fibroid that is giving no symptoms. This is not a large class of cases and therefore not a very important difference. Any tumor that begins to give trouble or atypical symptoms, even if only an irregular discharge, I believe should be removed. The tendency toward malignant degeneration gives me one of the elements of my belief. The remainder are furnished by the greater frequency of troublesome nonmalignant degeneration, the likelihood of hemorrhage and chronic anemia with cardiac and vascular disturbances, the frequency of pain and more or less dangerous pressure effects upon the urinary tract, the intestines and surrounding organs, the proven failure of fibroids to cease from troubling with the menopause, and the certainty that in a large percentage of cases delay merely means operation later under less favorable conditions.

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TREATMENT OF THE RETROFLEXED GRAVID ADHERENT UTERUS WITH REPORT OF TWO CASES.

BY

X. O. WERDER, M. D.,

Pittsburg, Pa.

PREGNANCY in a retroflexed adherent uterus is an occurrence rarely observed, for the reason that in most such cases the cause of this condition is an infection followed by such changes in the tubes and ovaries that conception is no longer possible. Even should this function of the adnexa not be seriously enough disturbed to prevent impregnation, the fertilized ovum will rarely find a sufficiently healthy endometrium for normal development, and early abortion, therefore, will result. This no doubt explains why such few cases of this complication of pregnancy are reported. While in the retroflexed gravid uterus without adhesions nature will often come to the aid of the patient, so that spontaneous reposition and permanent relief may be obtained during the first two months, this can hardly be expected in a uterus bound down by adhesions, and here prompt surgical intervention is indicated. Manual assistance which is usually sufficient to replace the gravid uterus not complicated by adhesions will rarely if ever be of any avail. Two cases of this character have been observed by me which I consider of sufficient interest to place on record.

CASE I.—October 15, 1906, Mrs. T., age thirty, married over three years was referred to me by Dr. Kniffler. She had never been pregnant. She has not been well for over a year and complains of pains in the left side, especially when walking down hill. Menses have been regular, pained considerably first day, rather profuse lasting five or six days. Aside from this she has always enjoyed good health. She has been rather nervous. Her husband had gonorrhea four years ago. Examination showed the uterus retroflexed, but fairly movable. The left ovary and tube slightly enlarged, thickened, and adherent and very sensitive, right ovary seemed entirely normal. Under local and general treatment soreness in the pelvis gradually

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disappeared and later on an attempt to replace the uterus was made, but found impossible on account of adhesions. No further attempt at reposition, therefore, was made, especially as the manipulation caused a return of soreness in the pelvis which, however, promptly subsided.

Last menstrual period September 1, 1908. Examination in November showed the uterus much enlarged, still retroverted, the size of about six or seven weeks' pregnancy. She complained of much backache during the last two weeks, nausea, especially in the morning, and pains through the inguinal region, particularly on the left side. Attempt to replace the uterus failed. The above symptoms greatly increased during the next week or two with considerable dysuria, and she finally consented to go to Mercy Hospital for the purpose of trying reposition under anesthesia, or if that failed, to open the abdomen.

November 29, 1908, under anesthesia the uterus was found filling up the pelvis pretty completely, absolutely fixed and immovable. The abdomen was, therefore, opened and the fingers of the left hand passed down into the pelvis behind the uterus and firm bands of adhesions broken up. With considerable difficulty the uterus was finally brought up into the abdomen; it had the size of about two months and a half. The left ovary and tube were also found firmly adherent and the tube considerably enlarged and thickened. We contented ourselves with breaking up the adhesions. The right tube and ovary were perfectly normal. A modified Gilliam operation for shortening the round ligaments was then performed. The patient did very well until the third day when severe labor pains set in, followed after a time by profuse bleeding from the uterus with expulsion of the fetus and, later, the decidual tissues. The next morning I found some of the latter still partly attached to the uterine cavity, but had no difficulty in separating them with a finger in the uterus. After this her recovery was uninterrupted and complete. In May of this year she was delivered of a healthy child. Her labor was entirely normal and she enjoys excellent health. An examination made recently shows the uterus in perfectly normal position and the left ovary and tube practically normal.

CASE II.—July 17, 1910, I was called by Dr. Stewart, of Homestead, to see a Mrs. H. in consultation. She was forty-two years old; had one child, twenty years old. Had been married the second time for nine years, but had never been pregnant during

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the twenty years. Menses have always been regular, profuse, suffering much pain especially in both iliac regions. Her last period had been almost three months ago. For several weeks the patient had suffered very severe pains in right ovarian region. For five weeks she had vomited constantly, unable to retain even the slightest food or drink. About a month ago she states that she had several chills and also some elevation of temperature. Has lost much weight, and pulse is rather weak, varying from 90 to 110; bowels have been very constipated. On examination I found the abdomen considerably distended, with rigidity and tenderness over lower quadrant. Examination per vaginam was rather unsatisfactory on account of extreme tenderness of the parts, but the whole pelvis was found filled up by a firm, elastic mass. The cervix was drawn up behind the symphysis so that it could scarcely be reached. She was taken at once to Mercy Hospital and on July 19 under anesthesia another examination was made which showed the tumor to be the pregnant retroflexed uterus filling up the whole pelvis in which it was firmly fixed. The abdomen was opened and the uterus and both ovaries were found firmly adherent. The uterus filled up the pelvis so completely that it was difficult to push the hand down between the fundus and the promontory of the sacrum. The uterus and ovaries were freed from their attachments and the fundus raised out of the pelvis with considerable difficulty. The abdomen was then closed with one silkworm suture and layers of catgut.

The operation had the most gratifying effect, as regards both pain and vomiting. The stomach which had been unable to retain anything for practically five weeks became retentive. Only on the third day, when a laxative was administered, did she vomit once. On the second day after the operation she expressed a desire to get something to eat. Her recovery was very prompt and complete and at no time did she have any symptoms or signs of threatened abortion. A week ago her physician, Dr. Stewart, informed me that her progress has been quite favorable since leaving the hospital.

In this second case I did not attempt the radical cure of the uterine displacement which I did in the first case, but confined myself to the separation of adhesions and reposition of the uterus. I am firmly convinced that the prompt abortion following the first operation was largely if not entirely due to the shortening of the round ligaments with its accompanying trac-

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tion upon the uterine walls, and that, had this latter step of the operation been omitted, the fetus would probably have been saved. In this view I am confirmed by Küstner of Breslau, who in discussing this condition in *Centralblatt für Gynaekologie*, June 11, 1910, page 824, in connection with a case reported by Maiss, advocated prompt abdominal section, but advised against operation for the correction of the displacement, because of the danger of abortion and also because he does not believe that the operation, on account of the rapidly growing uterus and the consequent stretching of the attachments, would be followed by success. That the displacement was permanently cured by the operation of shortening of the round ligaments in my first case is probably due to the fact that the pregnancy was interrupted so promptly afterward. Had it gone on to term, the result might have been different.

In, closing, therefore, this brief report of these two cases of pregnancy in the retroflexed adherent uterus coming under my observation I wish to emphasize two points in the treatment.

Prompt operation as soon as the diagnosis under anesthesia has been confirmed.

2. Separation of adhesions and reposition of uterus, but avoidance of all attempts at radical treatment or any other operative steps endangering the continuance of pregnancy. When operating before the end of the second month, the introduction of a pessary for a short period will prevent a return of the displacement without any danger to the fetus.

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OBITUARY MEMOIR

OF

WILLIAM HENRY TAYLOR

BY

CHARLES A. L. REED.

WILLIAM HENRY TAYLOR, one of the Founders and the First President of the American Association of Obstetricians and Gynecologists, died at his home in Cincinnati, February 6, 1910, in his seventy-third year.

Dr. Taylor was born in Cincinnati, Sunday, December 25, 1836, the son of Caleb Wright Taylor of New Jersey and Mary Jordan Davis of Virginia. He was educated in the public schools and private academies of his native city. Among the latter institutions that he attended was one belonging to the Friends, to which sect he maintained not only formal but active relations up to the date of his death. In 1855 he began the study of medicine under the preceptorship of Dr. William Wood of Cincinnati. The stereotyped requirements for a medical student of that period was "three years study under a general practitioner and two courses of lectures." In the case of Dr. Taylor, however, there was a variation from the usual program for we find that, without waiting to complete his "apprenticeship," he at once became a student in the Miami Medical College. He was then but eighteen years of age and, consequently, was but twenty-one, when, three years later, he graduated from the Medical College of Ohio with which institution the Miami Medical College had coalesced during the preceding year. He at once entered the old Commercial Hospital—the predecessor of the present Cincinnati Hospital—as interne, where Jesse P. Judkins, John A. Murphy, John A. Tate, John Davis, Thomas Kearney, D. D. Bramble, A. J. Miles and others of subsequent distinction, either had served or were soon to serve in similar capacity. In fact the internship in that institution, established along the lines of similar service in the hospitals of Paris, was the stepping stone to professional eminence by the really promising recruits to the medical profession of that period.

After his graduation, Dr. Taylor began his practice, as many another successful physician has done, by accepting the position

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WILLIAM HENRY TAYLOR.

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of physician to the out-door poor, and held it for five years. Two years after graduation, however, he was appointed pathologist to the Cincinnati Hospital. This was the first position of the kind in the history of the city and one which he held for the succeeding twelve years, when he was made obstetrician in the succeeding institution—the Cincinnati Hospital—which he held for the next forty years.

In the chronologic order, it is proper next to mention that, with the outbreak of the Civil War, Dr. Taylor found the nonmilitantism of his religious tenets in embarrassing conflict with his patriotism. He had long been in sympathetic and practical cooperation with "Friends" and others in conducting the celebrated "Underground Railroad" by means of which the slaves from Kentucky and further South were safely spirited through the intermediate zone of the Stars and Stripes to the land of freedom under the fold of the English Jack. With the first shot at Ft. Sumpter, the impulse to go to the front was experienced by every man, who, like Dr. Taylor, had been identified with the great movement for the manumission of the slaves. His convictions would not, however, permit him to take up arms against the life of a fellowman. His mission was to save, not to slay. So he contented himself with noncombatant activity in support of the Federal cause. He was active in the work for the soldiers carried on at the old St. John's Hospital and elsewhere in Cincinnati and he was especially effective in promoting the work of succor carried on by the celebrated "Sanitary Commission" under the auspices of which he made two trips to Pittsburg Landing, Tennessee, each time bringing back with him several hundred sick and wounded soldiers.

The instinct of the teacher was always a determining trait in Dr. Taylor's character. This prompted him to take up his work, first, as a pathologist and next as an obstetrician in the hospitals and to maintain that activity during all of his professional career. It, furthermore, prompted him to identify himself with Jesse P. Judkins, John A. Murphy, George Mendenhall, E. Williams, Wm. H. Mussey and others in the reorganization of the Miami Medical College in 1866. He accepted the chair of physiology and pathology in that institution and retained it until 1873, when he was made professor of obstetrics. It prompted him to accept the professorship of obstetrics in the Laura Memorial Medical College during the few years of its

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existence, beginning in 1890. It was this same instinct of the teacher which made him a frequent speaker in the Friends' meetings; which prompted him to a life long identification with the Sunday School movement; and which induced him for years and chiefly at his own expense, to conduct a Sunday mission in one of the slum quarters of the city. He was a frequent speaker at the House of Refuge—a retreat for wayward youths—which he served gratuitously as physician for a period of something like thirty years. He took a similarly active interest in the Children's Home, of which he was president for a number of years and which had been established following a suggestion by his venerated mother. Here, too, he served for a period of forty years. He was for many years a director of the Young Men's Christian Association and was one of the incorporators of the "Union Bethel,"—both helpful agencies in the uplift of humanity.

Dr. Taylor married Miss Mary E. Haynes of Richmond, Indiana, May 30, 1871, of which union one son, Dr. William Jordan Taylor of Cincinnati, is the only survivor. Following the death of his first wife, Dr. Taylor married Miss Helen R. Collard, August 24, 1880, of which union a daughter, Helen Mary Taylor is the only child. Mrs. Taylor survives her husband.

Dr. Taylor was always identified with and was a strong believer in the importance of organization within his profession. He was an early member of the Cincinnati Academy of Medicine but withdrew for several years when he felt that that body had taken a position on an ethical question that he could not endorse. In this interval, however, he was identified with the Cincinnati Medical Society which he and others had organized as a matter of protest in 1874. With the coalescence of that body with the Cincinnati Academy of Medicine in 1893, Dr. Taylor again resumed his membership in the latter body. He was a member of the Ohio State Medical Association, the American Medical Association and of the American Association of Obstetricians and Gynecologists.

The foregoing cyclopedic facts, gleaned largely from the excellent memorial address[1] on Dr. Taylor by his life long friend, Dr. A. G. Drury, and from Dr. Otto Juettner's excellent work,[2] fail to convey anything like an adequate idea of the living, breathing man. Nor is it possible for words to make a represen-

[1] *Lancet-Clinic*, April 9, 1910.
[2] "Daniel Drake and His Followers," Cincinnati, 1909.

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tative and vitalized portrait of this man whose comings and goings were for so many years a part of the life of our profession. He was above the medium height. In early life he was very slender. His well poised and unusually large head gave one the impression of superior cerebral development. His eyes were full, well set and looked straight at one without wavering. His mouth was obscured by a heavy dark mustache, worn in earlier life, with an imperial but later with a full but cropped beard. His step was quick and alert. His movements were those of a man with a purpose. Before his class he had an aplom which, with his clear diction and mellow voice, commanded instant and sustained attention. What he taught was instinctively accepted as the last word on the subject under consideration. He taught in such terms and by such means and so demonstrated the accuracy of his teachings by his work in the wards that they who heard him learned to lean upon him. It thus came about that for many years he enjoyed a distinct primacy in the Ohio Valley as an obstetric consultant.

It was the privilege of the writer to have heard Dr. Taylor as a lecturer, to have had the benefit of his demonstrations as a clinical teacher, and subsequently for several years to have served with him as a member of the staff of the Cincinnati Hospital. In these various capacities and as a colleague in different medical organizations, he always found him not only a man of learning and a skilful practitioner but cordial, frank, honest, straightforward—in short, a gentleman.

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MARCUS ROSENWASSER.

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IN MEMORIAM.

MARCUS ROSENWASSER, M. D.

BY

ROLAND E. SKEEL, M. D.

DR. MARCUS ROSENWASSER died at his home in Cleveland, on September 4, 1910. He had been a Fellow of this Association for nineteen years. He was born in Bohemia, October 27, 1846, of Jewish parents, and came to Cleveland with his parents when eight years of age. He completed his preliminary education in the Cleveland public schools and then returned to Bohemia for his medical education which was begun in the University of Prague and finished in Wuertzeberg in 1867. After some time spent in postgraduate study he returned to Cleveland and began the practice of his profession at first as a general practitioner. In 1893 he discontinued his general practice and devoted himself exclusively to gynecology and general consultation work, which he continued until the time of his death. From the outset he was preeminently successful for he possessed those qualifications which made for the highest standards in medicine.

Dr. Rosenwasser was always looked upon with the greatest respect by his colleagues for the clearness of his judgment and the absolute honesty of his opinions, indeed his impersonal and unequivocal honesty was his most striking characteristic. Whether one agreed with or differed from Dr. Rosenwasser's opinions he was always convinced that they were sincere.

During his residence in Cleveland he was president of the Cleveland Academy of Medicine, in 1892 vice-president of this Association; in 1888 he began his career as a teacher of gynecology under the title of Professor of Medical and Surgical Diseases of Women in the Medical Department of Wooster University, of which institution he was for many years dean. Later he was professor of diseases of women in the Medical Department of the Ohio Wesleyan University, which succeeded the former institution, which position he held until his last illness occurred. He also occupied many hospital positions in the line of gynecology and abdominal surgery; and was for some years a member of the

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board of health. In spite of these honors which had come to him his demeanor was that of a calm and modest gentleman.

He was greatly interested in the Cleveland Medical Library and left to it his own personal library and a bequest of $10,000.

As a gynecologist Dr. Rosenwasser stood very high in his own community and was a national figure in his advocacy of the delayed treatment of ectopic pregnancy, a proceeding which has found many adherents and the following of which was thoroughly in keeping with his conservative habit of mind.

A product of the older school of gynecologists, having studied under Dr. E. W. Cushing of Boston and Dr. Joseph Price of Philadelphia, he was an adept at the mechanical treatment and the plastic work, for which this school was famous, as well as to the later developments of radical abdominal surgery to which he brought a wide experience from his previous general practice which made his judgment unusually sound.

Dr. Rosenwasser's death from angina pectoris, while not unexpected because of some prodromal symptoms, nevertheless came with a distinct shock to a host of friends both professional and lay in the community.

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MONTGOMERY LINVILLE.

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OBITUARY MEMOIR

OF

MONTGOMERY LINVILLE,

New Castle, Pa.

DR. MONTGOMERY LINVILLE was born in Independence, Washington County, Pa., on March 28, 1854, and died at his home on North Mercer Street on November 14, 1910. He was the son of Jeremiah and Martha J. Montgomery Linville. His mother was a member of a distinguished family, one brother having made a brilliant record in Congress. At the early age of sixteen Dr. Linville graduated from Bethany College, and then entered Jefferson Medical College, and graduated in 1873 when only nineteen years of age. After his graduation he commenced the practice of his profession in Princeton, Lawrence County, Pa. He remained there only a short time and then moved to New Castle, Pa., where he achieved success and was recognized as the leading surgeon in that part of the country.

He was a man of pronounced literary tastes and was very much interested in the classics, and kept up his studies in Greek and Latin prose. Very early in his medical career he went to Europe, and visited the important clinics in London, Paris, Berlin and the other large cities of the continent, as well as the various post-graduate schools and hospitals in our own country.

He was married twice. His first wife was Delia Chapman and she died two years after their marriage. His second wife was Miss Nanette C. Cosel, who survives him. He was a prominent member of the Masonic fraternity, and was identified with many public institutions of New Castle, and other neighboring cities as stockholder and director. He was a man full of generous impulses, and his many acts of kindness to the poor and needy, his assistance to them, and acts of bounty will long be remembered. His loss will be a severe blow to the community in which he lived, and to the people whose best interests he served so well.

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OBITUARY MEMOIR

OF

GEORGE E. GOODFELLOW,

San Francisco, Cal.

DR. GEORGE E. GOODFELLOW, formerly of San Francisco, more recently of Los Angeles, died at the Angelus Hospital in the latter city December 7, 1910, aged fifty-four years. He graduated in medicine from the University of Wooster, Cleveland, in 1876, and soon became a prominent surgeon in California. He was for five years chief surgeon of the Southern Pacific railway lines in Mexico with headquarters at Guaymas, Sonora, and had been a surgeon during the war with Spain, seeing service in Cuba.

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